A Training Manual for Program Managers on Policy Development for Malaria Control

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A TRAINING MANUAL FOR PROGRAM MANAGERS ON POLICY DEVELOPMENT FOR MALARIA CONTROL

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BACKGROUND

The Africa Child Survival Initiative—Combatting Childhood Communicable Diseases (ACSI-CCCD) Project was established in 1981 by the United States Agency for International Development. Prime responsibility for project implementation was given to the Centers for Disease Control and Prevention (CDC), an agency of the United States Public Health Service. The goal of the CCCD project is to strengthen the capacities of sub-Saharan countries to prevent and control the priority causes of mortality, morbidity and disability, and to reduce infant and child mortality. Vaccine-preventable diseases, diarrheal diseases, malaria, and acute respiratory infections were selected as target diseases. CCCD has improved the delivery of health services for each of these diseases by providing assistance to African governments in health education, training and supervision, operations research, health information systems, and health financing (Foster, 1993).

Between 1981 and 1990, activities for the malaria component of the CCCD project focused on improving case management of patients by defining more precisely the epidemiology of malaria, by testing the effectiveness of recommended control measures, and by strengthening national leadership (Centers for Disease Control, 1993). Since 1990, CCCD has increased its emphasis on the programmatic aspects of malaria control. In collaboration with the World Health Organization (WHO) and African ministries of health, CCCD has adopted a systematic approach to improve the management of malaria control programs. This approach consists of four phases: policy development, program planning, implementation, and evaluation. In each phase, training and technical assistance was provided to improve the national malaria control program managers' skills.

Intercountry workshops were an important method used during the policy and program planning phases. The first two-week workshop was titled "Policy Development for Malaria Control" and took place in Bobo-Dioulasso, Burkina Faso, from June 27 to July 10, 1991. The second two-week workshop, "Program Planning and Management for Malaria Control" was conducted in Abidjan, Côte d'Ivoire, from May 18 - 29, 1992. The workshops were attended by national malaria control program managers and other ministry of health personnel involved in malaria control, representing 21 francophone African countries.

The policy workshop was designed to improve program managers critical decision-making skills in formulating national malaria control policy through the use of epidemiologic and behavioral data. By the end of the workshop, participants developed draft policy guidelines for health facility- and home-based case management and prevention of malaria for their countries. The program planning workshop was designed to improve the planning skills of program managers and to discuss program management issues. During the workshop, participants drafted a preliminary national malaria control program plan.

After each workshop, follow-up visits were conducted in many of the participating countries to assist program managers in completing and refining their malaria control policy and plan. Most program managers also conducted national workshops and symposiums for the purpose of building consensus on these policies and plans among key decision makers. Upon receiving approval for the malaria control policy and program plan by the minister of health, managers have moved their program into the implementation phase and are evaluating progress toward the attainment of their objectives.

PURPOSE OF THE TRAINING MANUAL

The training manual, *Policy Development for Malaria Control*, is composed of nine lesson plans. These materials were developed by training specialists and malariologists from CDC, in collaboration with African program managers and WHO. They are based on the lesson plans used during the Bobo-Dioulasso workshop, and have been revised according to comments made by both training team members and workshop participants. What is presented in this manual reflects ideas for program managers, trainers, and international organizations for conducting future intercountry or national workshops on policy development for malaria control. All materials need to be adapted based on the participating countries' needs and priorities.

USERS GUIDE

Design and Evaluation of the Workshop

The Users Guide consists of (1) workshop objectives, (2) a description of the lesson plans, (3) workshop preparation activities and a training schedule, and (4) workshop evaluation guidelines. The design of the training workshop is based on the principles of adult learning theory. This theory states that adults learn best when there is respect for what the learner already knows, when learners see how they can use their new knowledge and skills immediately, and when what they are learning is directly related to their own life experience (Vella, 1989).

I. Objectives

The overall objectives for the Policy Development workshop are for participants to —

- State the goal of the malaria control program.
- Identify the primary interventions to reach the goal.
- Identify strategies for case management and prevention.
- Draft policy guidelines for case management strategies in health services and in the home, and for prevention strategies.

II. Lesson Plans

The training manual consists of nine lesson plans. Each lesson plan guides the trainer through an introduction to the subject, a demonstration of the skill(s) to be learned, opportunities for participants to practice new skills and receive feedback from colleagues and trainers, and an application of the skills to the country situation through practical exercises.

Each lesson plan requires a minimum of one day (8 hours) to conduct. The majority of the time is spent on application exercises, and discussion of policy decisions proposed by each country. Participants work in small groups and in country teams to complete the exercises, and discuss their results in plenary sessions.

There are two main sections to each lesson plan: (1) facilitator activities, and (2) learning aids. *Facilitator activities* are instructions to trainers designed to help them guide participants through a series of steps intended to take full advantage of the participants' experience in malaria control. The facilitator activities are structured in the following manner:

(A) **Introduction** to the subject

- Presentation of session objectives
- Introduction of new material
- Questions asked to participants about their previous experiences
- Discussion on the relevance of the subject

(B) **Demonstration** of skills to be learned

- Presentation of case study(ies) from one or more countries
- Questions and discussion of demonstration exercise to ensure participants' understanding of the subject

(C) Skill **practice and feedback**

- Exercises in small groups or in country teams
- Feedback from colleagues and trainers
- Presentation and discussion of group work

(D) **Application** of skills to country situation

- Discussion of policy issues relevant to each country
- Exercise in small groups or country teams
- Presentation and discussion of country team work

(E) **Summary** of session

- Presentation of key points
- Questions, comparison of experiences, and discussion of application of skills learned
- Identification of issues to resolve

Learning aids are included for each lesson plan. They summarize technical information, provide sample responses to questions and examples of case studies from countries, and outline sample exercises to use for the "practice and feedback" and "application" sections. Learning aids do not reflect the entire content of the workshop. Instead, they introduce the trainer to possible responses by participants. Because of the interactive methods employed when conducting these workshops, the content of the lesson plans will draw heavily from participants' experiences. Most of the learning aids are presently not appropriate as handouts because they only reflect examples of participants' responses. Trainers need to decide if they will ask participants to take notes during the sessions, or if a designated note-taker will provide summary reports of each session. Data presented in this training manual were abstracted from various national surveys, and should be reviewed and updated before use in future workshops.

III. **Preparation for the Workshop**

Establish a timeline

Intercountry workshops take many months to prepare. Sufficient time must be built into the planning schedule to allow adaptation of the training materials. Follow-up activities and evaluation of the workshop must also be planned prior to its implementation. The following timetable provides an example of the steps organizers need to take. Several of these steps are explained in detail in the next pages.

Activity	Time frame
Organizers announce workshop	6-12 months prior to workshop
Identify and recruit participants	4-6 months prior to workshop
Identify and recruit trainers	4-6 months prior to workshop
Conduct assessment of participants' needs	3 months prior to workshop
Meet with selected trainers to develop or revise training materials based on needs assessment results, and to design workshop evaluation plan	1-week meeting, 2 months prior to workshop
Select training site and arrange logistics	2 to 3 months prior to workshop
Prepare and conduct pre-workshop planning meeting with workshop trainers	3 to 7 days immediately prior to workshop
Trainers finalize workshop materials	2 days prior to workshop
Conduct workshop	2 or more weeks
Monitor learning and accomplishments after the workshop through surveys and site visits	4 to 9 months after workshop (or as necessary on a periodic basis)

Select participants

Participants in the workshop should include national, regional, or district program managers for malaria control, or ministry of health personnel who make policy or planning decisions. They must be technically knowledgeable in malaria control policy and programming issues. The exercises are designed to be conducted in teams; therefore, each country (region or district depending on the workshop's format) should be represented by two to three participants. Participants should be notified several months in advance and asked to bring current epidemiological and behavioral data on malaria control in their country, and any available national malaria policies and plans, to the workshop.

Select and train trainers

The workshop materials presented in this manual have been designed for use by malariologists, and policy development and program management specialists. Trainers selected to facilitate the workshop should have prior experience in conducting workshops that use interactive teaching methods. It is also recommended that they have basic technical knowledge of malaria control in Africa. Before the workshop, trainers must be convened to familiarize themselves with the materials; to adapt the materials to the specific course objectives, participants, and cultural context; and to practice delivering the lesson plans. At least five days is suggested for the pre-workshop trainers meeting. Teams of two or more trainers are recommended to facilitate each session. All trainers are expected to assist country teams in developing their policy guidelines during the workshop, and to support them by monitoring the continual development of these policies following the workshop.

Conduct a training needs assessment

Prior to conducting a workshop, the trainers and organizers should assess the participants' needs and priorities. Results from the needs assessment can be used to modify the lesson plans and the workshop schedule. Several methods are listed below.

1. **Pre-workshop questionnaire**

   Purpose: To identify program managers' skills and priorities on malaria policy development issues

   Procedures: A self-administered questionnaire is sent to prospective participants several months before the workshop. Participants are asked to rate their skills for several policy development topics from

good to weak, and to prioritize areas on policy development for future training. The frequency of responses is determined for each item, and the results are presented to trainers during their pre-workshop planning meeting. (A sample questionnaire is included in Appendix A.)

2. **Interviews with program managers**

Purpose: To discuss, in depth, program managers' priorities and concerns regarding policy development issues.

Procedures: Site visits are conducted to prospective participants' countries (regions or districts). An interview protocol is prepared by the interviewer to guide the discussion. Results are summarized and presented to trainers during their pre-workshop planning meeting.

3. **Review of existing national policies**

Purpose: To gain a better understanding of the strengths and weaknesses of existing national policies on malaria control.

Procedures: An independent reviewer assembles all existing malaria policies from prospective participants. Similarities and differences in layout and structure are determined, and the overall quality of the policies is assessed. Results are summarized and presented to trainers during the pre-workshop meeting.

Draft a preliminary workshop schedule

Each lesson plan builds upon the material presented in the previous lesson plan and should be presented in the sequence provided. A minimum of two weeks is required to cover the lesson plans in this training manual

.

A sample schedule for a 2-week workshop is provided on the next page.

SAMPLE SCHEDULE FOR POLICY DEVELOPMENT WORKSHOP

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Opening Lesson plan 1	Lesson Plan 2	Lesson Plan 3	Lesson Plan 4	Lesson Plan 5		
Lesson Plan 6	Lesson Plan 7	Lesson Plan 8	Lesson Plan 9	Drafting of policy guidelines Presenting by country teams Closing		

IV. Evaluation of the Workshop

The training process needs to be monitored throughout the workshop, and field application of skills and resulting outcomes need to be assessed after the workshop. Experience has shown that monitoring and evaluation are most beneficial when conducted in a constructive, positive, and nonintimidating manner. Several methods used to assess workshops are listed below. Results obtained through use of these methods are helpful in making practical mid-course modifications of the workshop, and in identifying possible barriers to the application of skills in the field. Evaluation methods should be adapted to each workshop situation, and trainers may want to omit or adapt selected methods to fit their own needs and specific workshop objectives. An evaluation team is needed to develop and implement the evaluation methods, and to assist in summarizing results. This team can be composed of several trainers.

A. Process Methods

1. Daily Curriculum Meetings

Purpose: To identify the strengths and weakness of each session, and to make final modifications in upcoming lesson plans.

Procedures: All facilitators meet at the close of each session (or day) to discuss the positive aspects of the session and the points that need to be improved. A summary of the next day's lesson plan is presented by the designated facilitator(s), and the training team discusses any outstanding issues on the content and methods to be used.

2. Large Group Participant Reaction Sessions

Purpose: To give all participants the opportunity to discuss the workshop's positive points, to identify areas for improvement, and to make recommendations for modifying the workshop.

Procedures: At the end of the second or third day of the workshop, all participants are requested to attend a 30- to 45-minute session. One workshop facilitator (the rest of the training team is absent to encourage objectivity of responses) presents three questions to the group: (1) What is helping you to learn during the workshop; i.e., positive aspects? (2) What is hindering you from learning; i.e., negative aspects and problems? and (3) What recommendations can be

made to address the problems? Responses to each question are written on flip chart paper by a participant acting as a note-taker, and a hand count of the number agreeing with the comment is taken. Results are presented to the training team by the note-taker at the end of the session.

This method can be repeated as needed during the workshop. A minimum of once during the first week, and once during the second week is recommended. Problems identified can be discussed in more depth during the focused group discussions (see below).

3. **Focused Group Discussions**

Purpose: To give participants the opportunity to discuss the content, relevance, logistics, etc., of the workshop in depth, and to make recommendations to the organizers on mid-course modifications.

Procedures: After the third or fourth day of training, a small group of participants (8 - 10) is selected to participate in a focused group discussion, either randomly or based on specific criteria agreed on by the training team (e.g., degree of participation during the sessions, professional position). This group discussion should be guided by one or two workshop facilitators using a protocol. (These facilitators should have previous experience in guiding focus groups.) A participant should act as note-taker and an additional facilitator can be an observer, if necessary. A tape recorder is recommended to ensure accuracy of participants' comments. One hour is suggested for the discussion and an additional hour to synthesize comments. Results from the focused group discussion should be presented first to the training team and then to all participants the following day by the note-taker.

4. **Final Workshop Questionnaire**

Purpose: To assess participants' reactions to workshop content, relevance, methods, and logistics.

Procedures: A self-administered questionnaire is completed by each participant on the next to last day of the workshop. Participants are asked to respond to a number of statements about the workshop, using a 5-point scale ranging from "strongly disagree" to "strongly agree". The frequency of responses is determined for each statement, and results are presented to participants on the final day of the workshop. A sample questionnaire is included in Appendix B.

B. **Assessment of Field Applications and Outcomes**

1. **Objective Review of Program Plans**

Purpose: To assess changes in malaria policies from before to after the workshop.

Procedures: An independent reviewer examines the major sections of the national policy on malaria control for each country at three points in time: before the workshop, at the close of the workshop, and six to nine months after the workshop once the national policy has been revised. Important results are shared with all participants.

2. **Progress Assessment during Site Visits to Countries**

Purpose: To identify problems encountered by workshop participants and other ministry of health personnel in completing the national policy, in gaining consensus with decision makers, and in seeking approval of the policy by the ministry and other collaborators.

Procedures: On-site reviews of the policy statement are conducted with workshop participants and discussions of obstacles encountered are held. (Note: Site visits vary greatly among countries. Visits conducted by trainers four to

seven months after the Bobo-Dioulasso policy development workshop found that a minimum of one week is required to review the main points of the workshop, and to discuss the policy statement with key decision makers in the ministry of health.)

3. **Post-workshop Questionnaire**

Purpose: To monitor actions taken after the workshop by participants, and to identify barriers to the policy development process and gaining policy approval by the ministry of health.

Procedures: Six months after the workshop, a self-administered questionnaire is sent to all participating countries. Participants are asked to report on the status of their policy statement and to identify any problems. Results are summarized and presented to all participants. This questionnaire can be repeated periodically. A sample questionnaire is included in Appendix C.

LESSON PLAN 1

GOAL OF A NATIONAL MALARIA CONTROL PROGRAM

OBJECTIVES: By the end of the session, participants should be able to —

1. List the reasons why malaria is an important problem in Africa.
2. Define a goal.
3. Describe the usefulness of establishing a goal for the national malaria control program.
4. Describe the impact of malaria on morbidity and mortality, and describe its economic cost in selected African countries.
5. Identify possible goals for a national malaria control program and the implications of each for planning a program.
6. Choose the priority goal for their country based on available data and operational limitations.

METHODS: Discussion, demonstration, small group and country team exercises

MATERIALS: Flip-chart paper, markers, transparencies, learning aids, participants' national data on malaria and childhood diseases.

TIME: 8 hours

FACILITATOR ACTIVITIES:

Introduction **(time: 1 hour, 30 minutes)**

1. Welcome participants to the workshop. Explain the working norms and discuss any outstanding logistical or administrative issues.

2. Explain that the purpose of the workshop is to (1) put epidemiologic and behavioral data to use in developing policy for malaria control; and (2) draft policy guidelines for case management and prevention of malaria.

3. Present the different components of the policy guidelines that will be produced during the workshop. Distribute the outline and identify those components to be covered during this session (section A).

   Learning Aid #1

4. Present the objectives for the session (title page).

5. Explain that the first step in the formulation of a policy for malaria control is to identify the extent of the malaria problem.

6. Explain that in most countries in Africa, malaria is regarded as an "important" problem.

   Ask participants to explain why this is so (i.e., How do we know malaria is a problem?).

   Learning Aid #2

7. Explain that the epidemiologic and economic extent of the problem of malaria in Africa will be reviewed during the session.

8. Explain that once the extent of the problem has been defined, policy guidelines for malaria may be formulated. Explain that this formulation begins with the establishment of a goal or a set of goals.

9. Give the definition of a goal.

   Learning Aid #3

10. Ask participants to describe the usefulness of setting a goal for the national malaria control program.

    Learning Aid #4

11. Explain that, in addition to reviewing the extent of the malaria problem, the different kinds of goals and their implications on planning will be reviewed later in the session.

Demonstration **(time: 1 hour, 30 minutes)**

1. Explain that the purpose of the demonstration is illustrate the extent of the malaria problem in Africa and to explore various goals that could be established for a national malaria control program.

2. Explain that to measure malaria morbidity accurately, the distinction between malaria infection and disease, and between malaria incidence and prevalence must be recognized.

   Ask participants to explain the difference between malaria infection and disease.

   Learning Aid #5

Ask participants to explain the difference between incidence and prevalence.

Learning Aid #6

3. Review the extent of malaria-attributable morbidity in Togo by considering several kinds of data from that country. Explain to participants that this review will attempt to quantify the morbidity problem in Togo.

Learning Aids #7, #8 & #9

4. Explain that the malaria-attributable mortality problem in Togo can be quantified by reviewing hospital records and community-based data..

Using data from hospital records in Togo, illustrate the extent of deaths (right column) and admissions (left column).

Learning Aid #10

Explain that, although hospital records provide the only reliable source of information available to estimate the number of malaria-attributable deaths, this data underestimates the extent of mortality. Explain that community-based data suggest that the majority of deaths occur outside health services, thus, hospitals see only a minute fraction of malaria.

Present data from Togo and the Gambia to illustrate this point.

Learning Aids #11 & #12

5. Review the economic impact of malaria using data from Rwanda.

Learning Aids #13 & #14

Explain that this is only a cursory review. Emphasize that malaria's cost is economically high to most countries and is increasing.

6. Explain that various goals for a malaria control program will now be discussed..

7. Explain that in the 1970s and '80s, the World Health Organization (WHO) identified goals called tactical variants for malaria. Explain that, although WHO no longer uses these terms, they are useful because they provide a framework for discussing the possible goals of a malaria control program.

   Ask participants to —
   - List these goals.
   - State the implication of each on planning a malaria control program.

   Learning Aid #15

8. Ask a participant to state which of these goals has been chosen as the priority for his/her national malaria control program.

   Ask —
   - How did you select this goal?
   - Does this goal adequately address the magnitude of the malaria problem (i.e., morbidity, mortality and economic impact)?
   - How has this goal helped you to plan your program?
   - How much progress has been made toward the goal (e.g., have the means been available to address it? Has there been a serious commitment to addressing the problem?)

   Remind participants that the choice of the goal depends on (1) the magnitude of the problem, (2) its relative importance compared to other problems, and (3) the means available to address it.

9. Ask other participants to share their goals and discuss how countries can arrive at different goals.

Practice and Feedback **(time: 1 hour, 30 minutes)**

1. Explain that the purpose of this exercise is to illustrate the extent of the malaria problem in various African countries (mortality, morbidity and economic impact), and to propose an appropriate goal for those countries.

2. Describe the task.

   Learning Aid #16

3. Divide the participants into three groups. Explain that group one will examine the mortality impact of malaria on a chosen country, group two will examine the morbidity impact of malaria on a chosen country, and group three will examine the economic impact on a chosen country.

   Each group should choose a country from among those represented in their group to serve as the focus for the exercise.

4. Assign facilitators to monitor the groups. Facilitators should do the following:
   - Review the task.
   - Assist the group with choosing a country for the task.
   - Inform participants of the time allotted for the exercise.
   - Arrange for the selection of a timekeeper and a note-taker.
   - Remain with designated group throughout the exercise and provide feedback when necessary.

5. Reconvene the groups and ask one participant from each group to briefly present the main points resulting from their group's discussion.

   Learning Aid #17

   Ask for comments and questions. Highlight those points of common agreement and those points that are unresolved.

Application **(time: 2 hours, 30 minutes)**

1. Explain that the purpose of this exercise is for participants to discuss the extent of the malaria problem in their own country (mortality, morbidity and economic impact), and to propose various goals, based on available data, for their national malaria control program.

2. Explain the task.

   Learning Aid #18

3. Divide the participants into their country teams. Explain that each country's own data and experience will form the basis of discussion for this exercise.

4. Assign facilitators to monitor country teams. Facilitators should do the following:
   - Review the task.
   - Inform participants of the time allotted for the exercise.
   - Arrange for the selection of a timekeeper and a note-taker.
   - Remain with designated group throughout the exercise and provide feedback when necessary.

5. Reconvene the participants into the large group. Ask selected representatives from country teams to present their work to the large group.

   Learning Aid #19

   Encourage comments and questions from the other country teams.

Synthesis and Summary **(time: 1 hour)**

1. Ask participants to summarize the key points of the session.

   Learning Aid #20

2. Ask participants to comment on the importance and applicability of skills learned during this session to their home country situations.

3. Ask participants to post their work completed during the application exercise on selecting goals in the plenary hall.

4. Review the accomplishment of the session's objectives (title page).

LEARNING AIDS

Learning Aid #1 Outline for policy guidelines

A. Goal of the malaria control program (*choices*)
   1. mortality reduction
   2. mortality and morbidity reduction
   3. reduction of transmission
   4. elimination/eradication of transmission

B. Primary interventions to reach the goal (*choices*)
   1. case management
   2. chemoprophylaxis of pregnant women
   3. personal protection
   4. vector control

C. Case management strategy (*priorities*)
   1. health services case management
   2. case management in the home

D. Case management policy in health services
   1. non-complicated malaria
      - providers of case management
      - components of case management (diagnosis, treatment, advice/education, and referral)
      - antimalarial drug choice for treatment
      - dosage schedule
      - auxiliary treatment
      - referral criteria
      - follow-up
      - estimated cost for treatment
      - who will pay for treatment

   2. therapeutic failure
      - providers of case management

- components of case management (diagnosis, treatment, advice/education, and referral)
- antimalarial drug choice for treatment
- dosage schedule
- auxiliary treatment
- referral criteria
- follow-up
- estimated cost for treatment
- who will pay for treatment

3. complicated/severe malaria
   - providers of case management
   - components of case management (diagnosis, treatment, advice/education, and referral)
   - antimalarial drug choice for treatment
   - dosage schedule
   - auxiliary treatment
   - referral criteria
   - follow-up
   - estimated cost for treatment
   - who will pay for treatment

F. Case management policy in the home
   1. diagnostic criteria to be used in the home

   2. treatment (only if encouraged)
      (a) antimalarial drug
      - antimalarial drug of choice, dosage and dosage schedule
      - source(s) of antimalarial
      - providers of care
      - cost of treatment

      (b) auxiliary/ancillary treatment
      - treatment of choice, dosage schedule
      - source(s) of treatment
      - providers of care
      - cost of treatment

3. self-referral
   - signs and symptoms for seeking additional care with health services

G. Prevention
   1. vector control
      - strategies to be promoted (larviciding, source reduction, residual spraying, etc.)
      - rationale for each strategy
      - where to be applied (coverage areas, target groups/communities)
      - conditions to apply (type of insecticide, when, how often, etc.)
      - how to manage strategy
      - persons responsible for managing strategy

   2. chemoprophylaxis
      - target group
      - rationale for strategy
      - antimalarial drug of choice
      - dosage schedule
      - sources of antimalarial
      - cost

   3. personal protection
      - strategies to be promoted (bednets/curtains (impregnated or not), insect repellant, etc)
      - rationale for each strategy
      - where to be applied (coverage areas, target groups/communities)
      - conditions to apply (type of insecticide for impregnation, when, how often, etc.)
      - how to manage strategy
      - persons responsible for managing strategy

Learning Aid #2 The problem of malaria

- Significant impact on morbidity
- Significant impact on mortality
- Significant economic impact: costs of treatment and control programs, lost income and quality of life

Learning Aid #3 Definition of a goal

A long-range positive statement that expresses an idealized vision of the quality of life that is nearly universally acceptable.

Learning Aid #4 Usefulness of setting a goal for the national malaria control program

- Provides a statement that can be used to guide operational planning; i.e., in the setting of program objectives and activities.
- Provides a guiding principle and motivating force for those responsible for carrying out the program.
- Allows attribution of funds corresponding to the program's perceived impact on the health status of the population.

Learning Aid #5 Malaria infection and disease

Malaria Infection can exist without causing disease -- asymptomatic infection. For example, in some endemic areas, 40 - 80% of asymptomatic school children will have positive blood smears.

- In sub-Saharan Africa, asymptomatic infections are much more frequent than disease.

Malaria Disease occurs when an infection causes symptoms and signs. The most frequent symptom and sign of malaria is fever (elevated temperature). Anemia is another common symptom of chronic malaria.

- There appears to be a direct relationship between the severity of symptoms and signs, and parasite densities.

Learning Aid #6 Definition of incidence and prevalence

Incidence: The number of new cases of malaria per year (or any other time interval) divided by the population.

Prevalence: The number of cases (persons with malaria parasites) at a certain point in time divided by the population at risk.

Learning Aid #7 **Morbidity impact**

In Togo, 1989

The population was 3.5 million. Among the 2,155,187 outpatient visits in 1989, 34% were for malaria. Thus, there were 732,763 reported malaria consultations, resulting in an annual reported incidence rate of —

$$\frac{\text{Reported consultations}}{\text{Togo population}} = \frac{732{,}763}{3{,}500{,}000} = \frac{21}{100} \text{ or } 21\%$$

Among the 45,586 hospital inpatients, 34% were for infectious and parasitic diseases. Fifty-eight percent of the 34% were for malaria. Therefore, 20% of hospital inpatients were for malaria.

(Service National de la Statistique Sanitaire, 1989)

In Togo, 1984

The median reported duration of fever was 3 days (mean, 3.6 days; range 0-15 days) in children under 5 years of age.

(Deming, 1989)

Learning Aid #8 **Morbidity impact**

The previous figures (in Learning Aid #7) do not mean that 20% of the population got malaria. Why? Because —

- Malaria occurs more often in younger age groups

  In Togo, 1989: 31% of reported malaria cases were in children less than 5 years of age.

- Several episodes can occur in the same person

  In Togo, 1989: 7-11 episodes in children less than 5 years of age

  (Service National de la Statistique Sanitaire, 1989)

But most importantly, there are problems with the quality of data:

- Case definition of malaria is non-specific:
  - symptoms are frequent and shared with many other entities
  - fever is frequently equated with malaria
  - clinical malaria is slide-confirmed in a very small percentage of cases

- Gross under-reporting:
  - self-medication is frequent, in which case the patient does not come to the attention of health services

  For example, in Togo, 1984: 83% of children were treated at home with an antimalarial drug

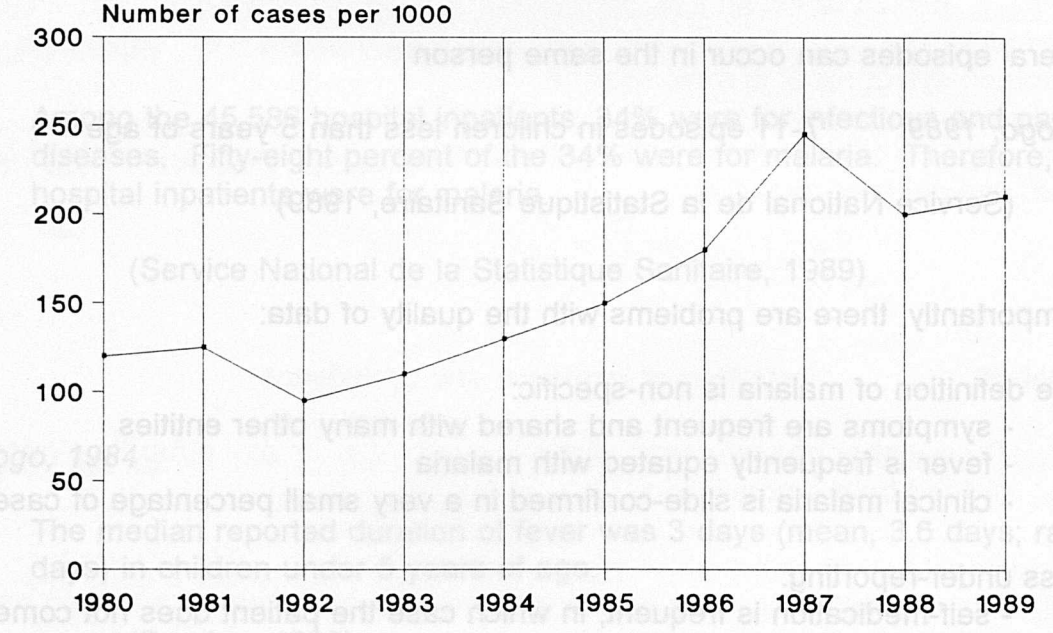
  (Deming, 1989)

  - reporting of cases in inconsistent and incomplete

Learning Aid #9 **Morbidity impact**

Despite incompleteness, the incidence figures presented in Learning Aids #7 & #8 allow us to measure the progression of malaria over time; presumably, the completeness and deviations remain relatively stable. The malaria morbidity figures for Togo from 1980 to 1989 show an increasing trend.

YEARLY INCIDENCE OF MALARIA
Togo, 1980 - 1989



SOURCE: SNSS, 1989

Why has there been an increase in morbidity incidence during the decade?

Possible reasons include the following:

- Chloroquine resistance
- Improved reporting
- More use of health units by the population
- Greater susceptibility of the population
- Increased transmission
- Biologic change of parasite
- Change in the environment
- Decreased control measures

Learning Aid #10 **Malaria mortality**

Reports from all Togo hospitals in 1989

	ADMISSIONS **(% OF TOTAL)** *RANK*	DEATHS **(% OF TOTAL)** *RANK*
Malaria	4,045 **(34%)** *no. 1*	199 **(22%)** *no. 1*
Anemia	1,481 **(12%)** *no. 2*	117 **(13%)** *no. 2*
Coma	563 **(5%)** *no. 6*	42 **(5%)** *no. 8*

(Service National de la Statistique Sanitaire, 1989)

Important conclusions:

- Malaria and anemia are the number 1 and the number 2 reported diseases, respectively, for admissions and deaths in Togo hospitals.
- An important qualifying factor, however, is that the completeness and accuracy of hospital records are unknown.

Learning Aid # 11 Malaria mortality

For example, in Togo, 1989

Population:		3,500,000
Proportion of children < 5:		approximately 20%
3,500,00 X 0.2	=	700,000 children under 5 years of age
Death rate in children < 5 in 1983-1987:		40/1,000
Every year, number of children dying: 700,000 X 40/1000 =		28,000

If we assume that the fraction of deaths attributable to malaria is the same in the community as in the hospital (22%, see Learning Aid #10) then every year—

28,000 X 0.22	=	6,160 children under 5 years of age die of malaria in Togo

The deaths reported from hospitals are only —

199/6,160	=	1 out of 31

(Service National de la Statistique Sanitaire, 1989)

In conclusion:

- Hospital deaths are a weak indicator of the extent of malaria-attributable mortality occurring in the community.
- Hospitals are not the optimal intervention sites if the program's objective is to save the great majority of pediatric patients. They are not the sole source of information on morbidity and mortality.
- Other methods for evaluating the mortality impact of malaria, such as community-based techniques, need to be developed. Special surveys using verbal autopsies could prove useful.

Learning Aid #12 Malaria Mortality

In the Gambia, April 1982 - March 1983:

Verbal autopsies were used to evaluate deaths in a rural community of the Gambia.

Out of 25 childhood deaths probably attributable to malaria —

- 23 occurred at home
- 2 occurred in the dispensary
- none occurred in the hospital

(Greenwood, 1987)

The estimated Gambian annual malaria-specific mortality rates in children under 5 was 10/1,000

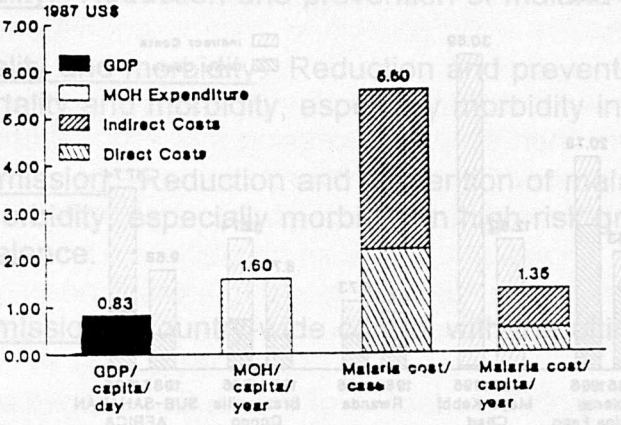
If this Gambia figure is extrapolated to Togo, there will be 700,000 children under 5 X 10/1000 = 7000 deaths in children under 5 due to malaria

That is fairly close to the 6,160 deaths due to malaria when the hospital extrapolates of Togo are used.

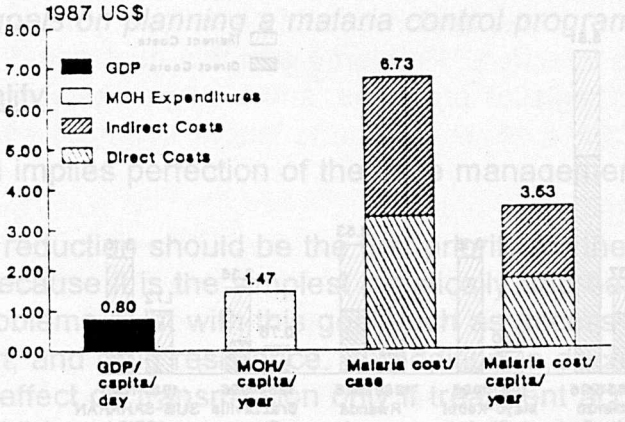
This means that if the number of reported hospital deaths due to malaria in 1989 in Togo (199) are divided by the extrapolated total annual malaria-specific mortality rates for children under 5 (7000), only 1 of 35 malaria deaths in children under 5 occur in hospitals and the remainder occur at home.

Learning Aid #13 **Malaria economic impact**

Cost of Malaria in Rwanda
1989



Cost of Malaria in Rwanda
Projected 1995



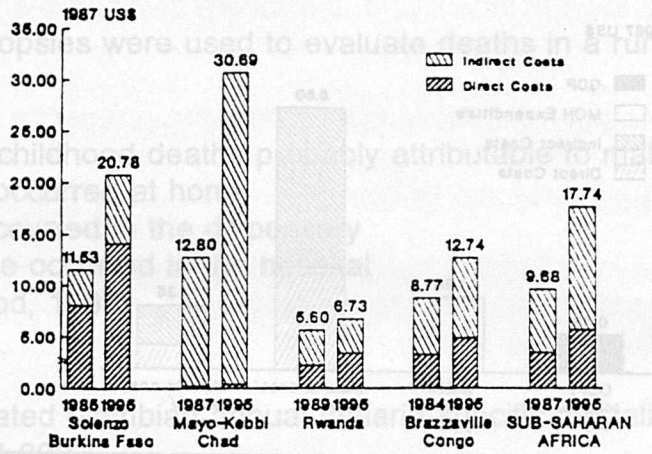
(Ettling, 1991)

In conclusion:

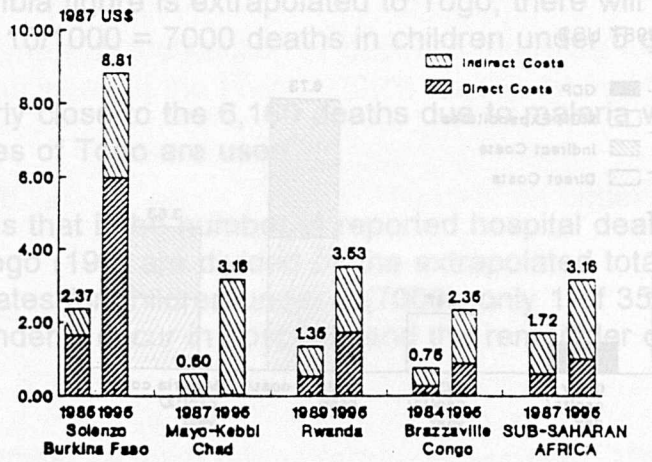
- Costs have several components:
  - direct costs (treatment and control programs)
  - indirect costs (lost income)
  - intangible effects (quality of life, not quantitative)
- Malaria cost per capita in 1991 nearly equals MOH expense per capita, and will exceed it in 1995
- Indirect costs are important (half or more) but more dependent on assumptions

Learning Aid #14 **Malaria economic impact**

Malaria Cost per Case by Site



Malaria Cost per Capita by Site



(Ettling, 1991)

In conclusion:

- Costs vary from one area to the other depending on local epidemiology, practices, and income production
- Costs are always high
- Costs will continue to increase

Learning Aid #15 **Goals of a malaria control program**

Options:

1. Decrease mortality: Reduction and prevention of malaria-attributable mortality.
2. Decrease mortality and morbidity: Reduction and prevention of malaria-attributable mortality and morbidity, especially morbidity in high risk groups.
3. Decrease transmission: Reduction and prevention of malaria-attributable mortality and morbidity, especially morbidity in high risk groups, plus reduction in malaria prevalence.
4. Eliminate transmission: Country-wide control with the ultimate objective of eradication.

Implications of these goals on planning a malaria control program

1. Decrease mortality
   - This goal implies perfection of the case management algorithm.
   - Mortality reduction should be the first priority for the ministry of health (MOH) because it is the simplest logistically and has a relatively low cost. Problems exist with this goal such as access to health services, education, and drug resistance. In addition, a decrease in mortality will have an effect on transmission only if treatment access and coverage are very high and if asymptomatic gametocyte carriers are decreased.

2. Decrease mortality and morbidity

- This goal implies perfection of the case management algorithm, plus perfection of selective chemoprophylaxis and individual personal protection.
- Mortality and morbidity reduction should be a second priority because it costs more than simply decreasing mortality. Problems with this goal include the need to reach more patients earlier, and the need for chemoprophylaxis and individual personal protection.

3. Decrease transmission

- This goal implies perfection of the case management algorithm, plus perfection of selective chemoprophylaxis and individual personal protection, plus perfection of some limited vector control interventions.
- Decreasing transmission should be a lower priority because the aim is to decrease infection. Problems with this goal include the high cost, important logistics problems, and biologic obstacles (vectors in Africa).

4. Eliminate transmission

- This goal implies perfection of the case management algorithm, plus perfection of selective chemoprophylaxis and personal protection, plus perfection of vector control interventions, plus perfection of all methods available to achieve eradication.
- In addition to the same problems as with decreasing transmission, this goal has a diminishing return.

Learning Aid #16 Practice and feedback exercise

In your assigned group, choose a country that can serve as the focus for this exercise. The country selected should have the necessary data on malaria-attributable mortality and morbidity, and the economic impact of malaria.

Group 1: Assess the morbidity impact of malaria in the selected country.

Determine the following:

- The number of outpatient visits due to malaria.
- The number of hospitalizations due to malaria.
- The proportional share of malaria in relationship to other diseases.
- The distribution of malaria among different age groups.
- The number of malaria attacks per year.
- The duration of attacks.

Discuss the kind of data collection system that might reliably reflect some aspect of malaria morbidity.

Group 2: Assess the mortality impact of malaria in the selected country.

Determine the following:

- The number of hospital admissions and deaths attributable to malaria, anemia, and coma.
- The proportional share of malaria in causes of deaths in hospitals.
- The proportion of malaria deaths occurring in the community.
- The overall and malaria-specific mortality rates in children under 5.

Discuss the kind of data collection system that could be adopted, especially to measure malaria deaths occurring in the community, considering that much of the data above are either not available or are only estimates of mortality.

Group 3: Assess the economic impact of malaria in the selected country.

Determine the following:

- The direct cost per year of malaria in children under 5:
  - the number of attacks
  - the cost of the drugs
  - for those visiting a health center, the cost of a consultation and transport
- Multiply each figure by the country's population of children under 5 (approximately 20%)

State what proportion of the ministry of health (MOH) budget this amount represents.

Each group:

1. Review the four possible goals of a malaria control program and their corresponding implications on program planning discussed during the demonstration.

2. Propose a priority goal for the selected country in view of the information presented.

3. Justify the choice of the goal.

Learning Aid #17 Discussion questions: Practice and feedback plenary

- Which aspect of malaria impact needs to be most urgently addressed -- mortality, morbidity or economic?
- What are the quantitative data that are required?
- What goal(s) were chosen for the malaria control program? On what basis?
- What data were missing that could have been helpful in decision making?
- Is there a data collection system in place capable of measuring progress toward the goal?

Learning Aid # 18 Application exercise

Each country should complete at least Step 1 and Step 2. If time remains, assess the economic impact of malaria in your country (Step 3). Step 4 and Step 5 should be completed as best possible based on the information available.

Step 1. Assess the <u>morbidity</u> impact of malaria in the selected country.

Determine the following:

- The number of outpatient visits due to malaria.
- The number of hospitalizations due to malaria.
- The proportional share of malaria in relationship to other diseases.
- The distribution of malaria among different age groups.
- The number of malaria attacks per year.
- The duration of attacks.

Discuss the kind of data collection system that might reliably reflect some aspect of malaria morbidity.

Step 2: Assess the <u>mortality</u> impact of malaria in the selected country.

Determine the following:

- The number of hospital admissions and deaths attributable to malaria, anemia, and coma.
- The proportional share of malaria in causes of deaths in hospitals.
- The proportion of malaria deaths occurring in the community.

- The overall and malaria-specific mortality rates in children under 5.

Discuss the kind of data collection system that could be adopted, especially to measure malaria deaths occurring in the community, considering that much of the data above are either not available or are only estimates of mortality.

Step 3: Assess the economic impact of malaria in the selected country.

Determine the following:

- The direct cost per year of malaria in children under 5:
  - the number of attacks
  - the cost of the drugs
  - for those visiting a health center, the cost of a consultation and transport
- Multiply each figure by the country's population of children under 5 (approximately 20%)

State what proportion of the ministry of health (MOH) budget this amount represents.

Step 4. Review the four goals and their corresponding implications on planning a malaria control program..

Step 5. Propose a priority goal for your country in view of the information presented, and justify your choice.

Learning Aid #19 Discussion questions: application plenary

- Which aspect of malaria impact needs to be most urgently addressed -- mortality, morbidity or economic?
- What are the quantitative data that are required?
- What goal(s) were chosen for the malaria control program? On what basis?
- What data were missing that could have been helpful in decision making?
- Is there a data collection system in place capable of measuring progress toward the goal?

Learning Aid #20 Key points of the session

- Malaria is a priority disease in sub-Saharan Africa. The morbidity, mortality, and economic impact of the disease is severe.

- A goal is a long-range statement that expresses an idealized vision of the quality of life. Goals are important because they provide guidelines for planning programs, motivating personnel, and allocating resources.

- Four possible goals of a national malaria control program are (1) decrease mortality, (2) decrease mortality and morbidity, (3) decrease transmission, and (4) eliminate transmission.

- Reduction of malaria-attributable mortality is often selected as the goal of a national malaria control program in sub-Saharan African countries.

LESSON PLAN 2

CASE MANAGEMENT IN HEALTH SERVICES: DIAGNOSIS

OBJECTIVES: By the end of the session, participants should be able to —

1. List the malaria control interventions that correspond to the four different goals of malaria control.
2. Describe the disadvantages of using fever as the primary clinical definition of malaria.
3. Identify elements to be included as diagnostic guidelines for a policy statement.
4. Describe the clinical overlap of acute respiratory infections (ARI) and malaria in at least one country in Africa.
5. Describe the implications of the ARI and malaria overlap on diagnostic policy.
6. Propose policy guidelines for diagnosing malaria in health services.

METHODS: Discussion, demonstration, small group and country-team exercises

MATERIALS: Learning aids, flip-chart paper, markers, transparencies

TIME: 8 hours

FACILITATOR ACTIVITIES:

Introduction **(time: 1 hour)**

1. Present the objectives for the session (title page).

2. Explain to participants that there are different, and sometimes multiple, interventions to achieve each of the four goals discussed in the previous session.

   Ask participants to list the goals and the corresponding interventions.

   Learning Aid #1

3. Remind participants that "decreasing mortality" was identified by most countries during the previous session as the priority goal of malaria control. This suggests that case management of malaria should be a priority intervention.

4. Ask participants to explain why case management should be a high priority intervention for malaria control programs.

   Learning Aid #2

5. Explain that because case management of malaria is a priority intervention, most sessions during this workshop will focus on the formulation of case management policy in health services and in the home.

   Explain that the last three sessions of this workshop will address the goals of decreasing mortality and morbidity, and decreasing transmission. Three interventions--chemoprophylaxis, personal protection and vector control--will be briefly discussed during these sessions.

6. Show participants those sections of the policy outline to be covered during this session.

   Learning Aid #3

7. Explain to participants that for case management to be effective, health service providers, both within and outside the formal health care system, must be able to identify a child with malaria, treat the child with appropriate antimalarial and ancillary drugs, advise parents during a clinical consultation, and refer the child when necessary.

   Ask participants to list the different kinds of health service providers within and outside the formal health care system.

   Learning Aid #4

8. Emphasize that all potential providers of case management services to children are important to consider in the formulation of policy because our primary concern is the child and the effect of case management on his or her health.

9. Explain that explicit guidelines for each component of case management — diagnosis, treatment, advice, and referral — should be included in a national malaria control policy, and that each country will have the opportunity to write these clinical guidelines during the workshop .

   Describe the different components of case management in health services.

   Learning Aid #5

10. Explain that the remainder of this session will focus on the formulation of diagnostic policy for case management of children with malaria.

Demonstration **(time: 2 hours)**

1. Explain that the purpose of the demonstration is to illustrate the complexity of malaria diagnosis.

2. Discuss the advantages and disadvantages of using fever as the primary clinical case definition of malaria.

   Request that the participants do the following:

   - State the World Health Organization (WHO) clinical case definition of malaria, in the absence of microscopy.

   - Describe why this clinical case definition is necessary.

   Learning Aid #6

3. Describe the disadvantages of the clinical case definition of malaria, using the example from Kenya.

   Learning Aid #7

4. Explain to participants why we are dealing with an imperfect situation regarding the clinical case definition of fever.

   Learning Aid #8

5. Ask participants to summarize the most important problems that arise when fever is used as the primary clinical case definition of malaria.

   Learning Aid #9

6. Ask participants to name other conditions that cause fever.

   Learning Aid #10

7. Remind participants that because fever can be caused by malaria and many other potentially serious diseases, WHO is recommending that the child be treated for all potential causes, whenever there is doubt about the cause of fever (for example, for both malaria and acute respiratory infection).

8. Ask participants to state if their countries currently have diagnostic guidelines in their national policies that reflect the complexity of malaria as illustrated by the discussion.

   Encourage those who have explicit guidelines to share them with the group.

9. Ask participants to identify elements to be included as diagnostic guidelines for a policy statement.

   Learning Aid #11

10. Ask participants how they would classify the different clinical presentations of malaria.

    Learning Aid #12

11. Explain to participants that, during the remainder of this session, they will have the opportunity to discuss the overlap of malaria and other diseases in their country, and then to identify policy guidelines for diagnosing the clinical presentations of malaria.

Practice and Feedback **(time: 1 hour, 30 minutes)**

1. Explain that the purpose of the practice and feedback exercise is to discuss the policy implications of the clinical overlap between ARI and malaria.

2. Present the clinical overlap of ARI and malaria as observed in Malawi.

   Learning Aid #13

3. Ask participants to identify the implications of diagnosing malaria and ARI on policy.

   Learning Aid #14

4. Ask participants if they have similar diagnostic problems as Malawi with overlapping diseases. Ask those who responded to suggest means for resolving diagnostic problems.

Application **(time: 2 hours, 30 minutes)**

1. Explain that the purpose of the application exercise is for each country to propose diagnostic criteria for acute and complicated malaria, therapeutic failure, and anemia associated with malaria.

2. Explain the task.

   Learning Aid #15

3. Divide the group into country teams.

4. Assign facilitators to monitor the country teams. Facilitators should do the following:

   - Review the task.
   - Inform the participants of the time allotted for the exercise.
   - Arrange for the selection of a timekeeper and note-taker.
   - Remain with the designated team throughout the exercise and provide feedback when necessary.

5. Reconvene the groups and ask selected teams to present their policy guidelines on diagnosis.

6. Ask for comments and questions.

Summary and Synthesis **(time: 45 minutes)**

1. Ask participants to summarize the key points of the session.

   Learning Aid #16

2. Explain that although data from several studies indicate the need for integration of case management strategies to improve assessment and treatment of children who often have more than one disorder, the number of studies that have been conducted has been small and limited by their disease specific focus. Additional and more comprehensive studies are needed to determine the degree and patterns with which common clinical disorders overlap.

   Ask participants to think about what future research needs to be done to improve our understanding of the overlap between malaria and other illnesses, such as ARI.

3. Ask participants to summarize implications of this problem on their malaria control policy guidelines.

4. Ask participants to post the results of their application exercise in the plenary hall.

5. Review the accomplishment of the session's objectives (title page)..

LEARNING AIDS

Learning Aid #1 Goals and Interventions

Goals	Interventions
Decrease mortality	Case management
Decrease mortality and morbidity	Case management Chemoprophylaxis Personal protection against contact with infected mosquitos
Decrease transmission	Vector control, such as domiciliary insecticide spraying and source reduction
Eliminate transmission	Extensive vector control with active detection of all infected individuals

Learning Aid #2	**Rationale for the priority of the case management intervention**
Impact	Reduction in malaria mortality, and the duration and severity of morbidity
Cost	Only ill individuals are treated, thereby reducing the overall cost of this intervention.
Safety	Healthy individuals are not exposed to the side effects of drugs, as in the case with chemoprophylaxis.
Efficacy	The efficacy of case management has been demonstrated, even though problems still exist (drug resistance, variety in treatment schedules, etc.).
Likely to be used	Ill people are willing to be treated.
Availability	Procurement and distribution has been demonstrated to be feasible, but problems do exist.
Feasibility	Standard regimens can be tested and administered, although compliance remains a problem.
Resistance	Restricted use of drugs/chemicals as opposed to wider use of drugs/chemicals in the case of chemoprophylaxis and insecticides will limit the development and spread of parasite and mosquito resistance.

Learning Aid #3 **Section of the policy outline to be covered during this session**

B. Primary <u>interventions</u> to reach the goal (*choices*)
   1. case management
   2. chemoprophylaxis of pregnant women
   3. personal protection
   4. vector control

Learning Aid #4 **Health service providers within and outside the formal health care system**

- Government health workers
- Pharmacists
- Traditional healers
- Village health workers
- Medicine sellers
- Private physicians
- Teachers
- Social workers
- Agriculture extension workers

Learning Aid #5 **Case management components**

Diagnosis	A description of the process followed by a health worker in identifying whether a child has malaria.
Treatment	A description of — - The precise antimalarial drug to be administered - The precise ancillary therapy to be administered - The precise moment when the drug and ancillary therapy are to be administered - The dosage and intervals at which it is to be administered - The cost of the drug and ancillary therapy - The recommended sources of the drug and ancillary therapy - Who will assume the costs
Education	The instructions, information, and/or advice given by a health worker to the parent of family member who has brought a child to the health facility for care. The instructions can address three general areas of behavior: care of the child while at the clinic, adherence to recommend treatment following a consultation and subsequent use of health services, if necessary.
Referral	A description of the circumstances under which health workers should direct the child, during or following treatment, to another level health facility.

Learning Aid #6 **Clinical case definition of malaria**

- WHO clinical case definition of malaria, in the absence of microscopy:

  Fever or history of fever in the absence of other obvious causes

- Necessity of clinical case definition:

  - Most people treating malaria do not have access to microscopy
  - Clinical malaria is often associated with fever
  - In Africa, many fevers without any obvious cause are due to malaria (depends, however, upon endemicity, season, age, and previous exposure of patient)
  - Malaria is potentially fatal and is treatable

Learning Aid #7 **Disadvantages of clinical case definition of malaria**

- Not all cases satisfying the case definition have malaria
- Some patients with malaria do not satisfy the clinical case definition

For example: Children under 5 seen at the outpatient department of a rural hospital in Kenya, 1989 (Lackritz, 1991)

		Fever		Total
		Yes	No	
Parasitemic	Yes	217	56	273
	No	88	38	126
	Total	305	94	399

How many patients were parasitemic? 273
How many of these parasitemic patients had fever? 217

79% (217/273) of parasitemic patients would have been detected using fever. The ***sensitivity*** of fever for detecting parasitemia was 79% in that context. Sensitivity can be defined as the ability of a test to identify correctly those who have the disease (Mausner, 1985).

How many patients, though ill, were not parasitemic? 126
How many of these non-parasitemic patients did not have fever? 38

30% (38/126) of non-parasitemic patients were afebrile. The ***specificity*** of fever for detecting parasitemia was 30%. Specificity can be defined as the ability of a test to identify correctly those who do <u>not</u> have the disease (Mausner, 1985).

Among the 305 febrile patients, 217 (71%) had parasites.
The ***predictive value positive*** (PVP) of having fever for having parasitemia was 71% (However, the PVP of not having fever for having parasitemia is 56/94 = 60%, not a very different value.) Predictive value positive can be defined as the proportion of true positives (diseased individuals) among all those who have positive test results (Mausner, 1985).

Among the 94 afebrile patients, 38 (40%) had no parasites.
The ***predictive value negative*** (PVN) of not having fever for not having parasitemia was 40%. (Again, the PVN of having fever for not having parasitemia is 88/217 = 29%, not a very different value.) Predictive value negative can be defined as the proportion of nondiseased individuals among all those who have negative test results (Mausner, 1985).

Thus:
- 29% (100% - 71%) of patients having fever did not have parasitemia, were treated unnecessarily with antimalarial drugs, and did not receive treatment for the real cause of their fever.
- 60% (100% - 40%) of patients without fever were ill and were parasitemic, and did not receive antimalarial drugs.

Learning Aid #8 **Clinical case definition: imperfect situation**

- Although we all agree to define malaria as a disease caused by malaria parasites, the presence of parasites in a sick child does not represent a "gold standard" for diagnosing malaria.

  Parasitemia is very frequent and can co-exist with other diseases. Conversely, a recently treated child could be aparasitemic while still suffering from symptoms due to malaria.

- Without a "gold standard" it is impossible to predict accurately PVP, PVN, etc. The values we have observed suggest that fever is not a very good predictor for malaria.

- The tendency to treat all patients with fever is based on a view that it is better to over treat because of the vulnerability of young children to malaria; these indices will depend in great part on the background level of parasitemia in the community.

Learning Aid #9 **Problems that arise when fever is used as the clinical case definition of malaria**

- Some patients with malaria will not have fever and thus will not be treated with antimalarial drugs. This problem can be addressed by treating afebrile patients if malaria is suspected.

  This precautionary overkill, practiced in most situations, could have implications in terms of cost, side effects, and resistance of antimalarial drugs.

- Some patients with fever will not have malaria; nevertheless, they will be given antimalarial drugs unnecessarily, but will not be treated for the potentially serious disease causing the fever.

  This problem can be addressed by an increased discrimination among patients presenting with fever. Malaria programs need to collect information on season- and age-specific rates of parasitemia as a first step in refining case management recommendations.

Learning Aid #10 Other conditions that cause fever

Other conditions that might cause fever:

- Viral infections
- Bacteremia
- Otitis media
- Bacterial meningitis
- Acute respiratory infections (ARI)
- AIDS
- Tuberculosis

Learning Aid #11 Elements to be included as diagnostic guidelines for malaria policy

- Case definition for malaria to be used by health services.
- Criteria for recognition of uncomplicated acute malaria
- Criteria for recognition of complicated acute malaria
- Criteria for recognition of therapeutic failures

Learning Aid #12 Clinical presentations of malaria: a practical classification

Uncomplicated acute malaria

Malaria symptoms in the absence of any signs of complicated disease. Fever (axillary temperature >37.5 degrees Celsius) is the most noted symptom, with or without accompanying mild symptoms; patient can swallow medications.

Complicated acute malaria

Patients with parasitemia and any one or more of the following symptoms:

- Altered consciousness
- Inability to take medications orally
- Respiratory distress
- Severe anemia
- Hypoglycemia
- Shock
- Convulsions

Therapeutic failure

Continuing symptoms, 2 - 3 days after initiation of drug therapy.

Recurrent malaria occurs in areas where transmission is intense or resistance to commonly used drugs exists. Anemia is a common clinical presentation in children with recurrent malaria.

Learning Aid #13 Clinical overlap of ARI and malaria in Malawi

- Children living in malaria-endemic areas and who have a history of fever in the previous 48 hours are presumed to have malaria and are treated with an antimalarial drug.
- Children with cough or difficult breathing who have an elevated respiratory rate or have lower chest wall in-drawing are presumed to have bacterial pneumonia and are treated with an antibiotic.
- Since both diseases are causes of fever and fever can result in increased respiratory rate, there could be substantial overlap in the clinical case definitions leading to confusion as to which treatment a child meeting both case definitions should receive.
- A study of children in Kamuzu Central Hospital in Lilongwe, Malawi found that almost all children who met the case definition for pneumonia also met the case definition for malaria: children meeting the clinical case definition for pneumonia constituted approximately 25% of children meeting the case definition for malaria.
- Children were assessed for malaria by microscopic examination of a thick blood film and assessed for pneumonia by chest radiograph. Results show about a third of children had malaria parasitemia, 5% had pneumonia, demonstrable by radiograph, and 3% had both. Most children (60%) had neither malaria nor pneumonia.
- These results indicated that current case definitions do not allow differentiation of children who have malaria from those who have pneumonia.
- Because children who met the pneumonia case definition were more likely to have *P. falciparum* parasitemia than those who did not, treatment for malaria should be included in treatment for presumed pneumonia in malarious areas, unless parasitemia can be excluded. Similarly, children meeting the malaria case definition should be assessed clinically for pneumonia.

(Redd, 1992)

Learning Aid #14 **Policy implications of clinical overlap of ARI and malaria**

- Microscopy has been judged to be prohibitively expensive by many countries for peripheral health units and has been discouraged as not being feasible or necessary for management of febrile illness in Africa. However, the costs of microscopy should be compared with those of widespread and unnecessary use of antimalarial drugs.
- More specific clinical definitions can reduce over-treatment but will not allow pneumonia to be distinguished from malaria.
- Improved laboratory support is needed to supplement the WHO diagnostic guidelines for malaria and pneumonia.

(Redd, 1992)

Learning Aid #15 Application exercise

1. Describe the problems of the current national case definition of malaria for your country.

2. Identify diagnostic problems between ARI and malaria.
   a. State the % of visits by children with pneumonia to a health facility.
   b. State the % of hospital admissions, and deaths from pneumonia.
   c. Compare this data to that on malaria or to those presenting with fever.

3. State what has been done in your country to investigate the problem with the current case definition of malaria.

4. Propose guidelines for diagnosing acute malaria (uncomplicated and complicated), and therapeutic failures to be included in the case management in health services section of your national policy statement.

5. Be prepared to discuss these guidelines with other participants.

Learning Aid #16 **Key points of the session**

- Case management is the primary intervention used to meet the goal of decreasing mortality due to malaria.

- The current WHO clinical case definition of malaria in the absence of microscopy is neither very sensitive nor specific. Not all cases satisfying the case definition have malaria, and some patients with malaria do not meet the clinical case definition.

- Diagnostic guidelines for malaria policy should include the case definition for malaria to be used by health services, and the criteria for recognition of uncomplicated and complicated malaria, and therapeutic failure.

- A study in Malawi found that patients with fever often meet the clinical case definition for both malaria and pneumonia.

LESSON PLAN 3

CASE MANAGEMENT IN HEALTH SERVICES: TREATMENT, EDUCATION AND REFERRAL

OBJECTIVES: By the end of the session, the participants will be able to–

1. Identify existing sites of case management services, from most peripheral to most central level.
2. Describe possible clinical situations at each site, from least severe to most severe.
3. State the goal of therapy for each clinical situation and the likely ability for each case management site to successfully achieve each goal.
4. List the criteria upon which antimalarial drugs and ancillary therapies may be judged with regard to suitability.
5. Identify existing antimalarial drugs and ancillary treatments.
6. Provisionally select antimalarial drugs and ancillary treatments appropriate for use at each site and clinical situation.
7. Describe potential plans for monitoring changes in drug therapy efficacy.
8. Identify the implications of anemia on the choice of drug.

METHODS: Discussion, demonstration, small group and country teams exercises

MATERIALS: Learning Aids, pen, markers, transparencies, flip charts

TIME: 8 hours

FACILITATOR ACTIVITIES:

Introduction **(time: 1 hour, 30 minutes)**

1. Present the objectives of the session (title page).

2. Remind participants that in addition to diagnosis, case management in health services, as defined in the previous session, includes treatment, advice/education, and referral services.

3. Show participants those sections of the policy outline to be covered during this session.

   Learning Aid #1

4. Ask participants to list the factors that must be taken into account in establishing or revising malaria policy guidelines for treatment, advice/education, and referral services.

   Learning Aid #2

5. Ask participants whether the health service needs are the same at all case management sites in a given country.

   Ask participants to list existing sites within the formal health care system, from most peripheral to most central, in any given African country.

   Learning Aid #3

6. Explain that not all sites in the formal health care system have the same therapeutic possibilities for managing malaria in its different forms.

Ask participants to list and define the three main clinical forms of malaria, from least to most severe.

Learning Aid #4

7. Ask participants to check Y (yes) or N (no) if the clinical situation can be managed at each of the case management sites.

   Learning Aid #5

8. Ask participants to state briefly the goal of therapy for each of the clinical situations just identified.

   Learning Aid #6

9. Ask participants to discuss existing resources (i.e., skills of health care providers, availability of drugs, supplies, and technical support) at each delivery point for uncomplicated malaria, therapeutic failure, and complicated malaria and how limitations in resources might affect providers' ability to achieve the goals of therapy for each situation.

   Using the table, ask participants to mark "yes" or "no" for each situation.

   Learning Aid #7

10. Explain that one could also classify case management sites in three categories, based on their therapeutic possibilities.

    Learning Aid #8

11. Explain that the range of therapeutic options available by category of service delivery site must be assessed before deciding on policy. Emphasize that a critical part of therapeutic options is the suitability of antimalarial drugs and ancillary therapies, and that judging their suitability demands further analysis before policy guidelines can be formulated for treatment, education, and referral.

12. Ask participants to cite the different criteria that should be used when assessing the suitability of antimalarial drugs and ancillary therapies.

    Learning Aid #9

    Highlight the criteria that may vary most from setting to setting.

    Learning Aid #10

13. Ask participants to describe the principal antimalarial drug options available at present, citing the advantages and disadvantages of each according to the following criteria:
    - efficacy
    - route of administration
    - safety
    - affordability
    - dosing

    Learning Aid #11

Demonstration **(time: 1 hour, 30 minutes)**

1. Explain that the purpose of this demonstration is for participants to examine a particular clinical presentation at one site in terms of the following:

   - Factors that are important for optimal case management
   - Determination of drug of choice
   - Determination of advice to be given to clients regarding drug administration
   - Identification of actions to take for continual assessment of drug therapy efficacy
   - Identification and ranking of decision questions in need of further research

2. Explain that this demonstration will look at case management of uncomplicated malaria by village health workers. An analysis of the remaining clinical presentations at the remaining corresponding case management sites will be completed in the practice and feedback and application exercises of this session.

3. Ask participants to identify the types of clinical malaria that village health workers (VHWs) can treat best, according to the table developed during the introduction (see LA #5).

   Reach a consensus with participants on the choice of uncomplicated malaria as the type of malaria VHWs can treat best.

4. Ask participants to name the factors that are important for optimal case management of each goal.

   Learning Aid #12

5. Ask participants to discuss the drug(s) of choice for treatment of uncomplicated malaria by village health workers, using the criteria agreed upon previously (see LA #11).

   Have participants list the pros and cons of the proposed drug(s).

   Learning Aid #13

   Discuss the use of ancillary measures, such as tylenol and tepid sponge baths to reduce fever.

6. Ask participants to state the type of advice that VHWs should give to every parent or family member regarding the administration of the antimalarial drug and ancillary therapy.

   Learning Aid #14

7. Ask participants to discuss actions VHWs can take for continuous surveillance of the efficacy of drug therapy for treatment of uncomplicated malaria.

   Learning Aid #15

8. Explain that chloroquine, which is still the first-line drug in most countries, needs to be carefully assessed in relation to anemia. Ask a participant whose country has done such an assessment to review the issue with the group.

   Learning Aid #16

9. Ask participants to identify decision questions in need of research in the case management of uncomplicated malaria by village health workers.

Ask selected participants to rank the decision questions according to their importance and feasibility for their respective countries.

Learning Aid #17

10. Ask participants to summarize and conclude the demonstration by listing the following for case management of uncomplicated malaria by village health workers:

- Perceived problems at this level and solutions
- Drug of choice
- Advice/education to be provided
- Potential value of surveillance of the efficacy of drug therapy
- Decision questions in need of further research

Practice and Feedback **(time: 2 hours)**

1. Explain that the purpose of practice and feedback exercise is to allow participants to examine and analyze clinical presentations of malaria at different levels of case management sites.

2. Explain the task.

Learning Aid #18

3. Divide the participants into four groups. Explain that each group will address the following situations:

Group 1: Case management of uncomplicated malaria in dispensaries
Group 2: Case management of therapeutic failure in dispensaries
Group 3: Case management of severe malaria in dispensaries
Group 4: Case management of severe malaria in hospitals

4. Assign facilitators to monitor each group. Facilitators should do the following:
   - Review the task.
   - Inform participants of the time allotted for the exercise.
   - Arrange for the selection of a timekeeper and a note-taker.
   - Remain with designated group throughout the exercise and provide feedback when necessary.

5. Reconvene the large group. Ask each group to present its work and encourage participants to ask questions and to comment on the work of the groups.

Application **(time: 2 hours)**

1. Explain that each country's own experience will serves as the basis for the work to be completed in this exercise.

2. Explain the task.

   Learning Aid #19

3. Divide the group into country teams.

4. Assign facilitators to monitor each team. Facilitators should do the following:
   - Review the task.
   - Inform participants of the time allotted for the exercise.
   - Arrange for the selection of a timekeeper and a note-taker.
   - Remain with designated team throughout the exercise and provide feedback when necessary.

Synthesis and Summary **(time: 1 hour)**

1. Select participants to present the results of the application exercise to the group. Encourage other participants to raise questions and to comment on the work of the country teams.

2. Ask participants how they are planning to monitor their drug choice and the implications of resistance on their policy.

3. Ask participants to summarize the key points of this session.

   Learning Aid #20

4. Ask participants to post the results of their application exercise in the plenary hall.

5. Review the accomplishment of the session's objectives (title page).

LEARNING AIDS

Learning Aid #1 **Sections of the policy outline to be covered during this session**

D. Health services case management policy
   1. non-complicated malaria
      - providers of case management
      - components of case management (diagnosis, treatment, advice/education, and referral)
      - antimalarial drug choice for treatment
      - dosage schedule
      - auxiliary treatment
      - referral criteria
      - follow-up
      - estimated cost for treatment

   2. therapeutic failure
      - providers of case management
      - components of case management (diagnosis, treatment, advice/education, and referral)
      - antimalarial drug choice for treatment
      - dosage schedule
      - auxiliary treatment
      - referral criteria
      - follow-up
      - estimated cost for treatment

   3. complicated/severe malaria
      - providers of case management
      - components of case management (diagnosis, treatment, advice/education, and referral)
      - antimalarial drug choice for treatment
      - dosage schedule
      - auxiliary treatment
      - referral criteria
      - follow-up
      - estimated cost for treatment

Learning Aid #2 Factors in policy formulation

- The clinical spectrum of various diseases and their severity.
- The benefits and disadvantages of antimalarial drugs and ancillary treatments.
- The pattern of drug resistance.
- Variability in the resources and level of training available at different delivery points and the availability of essential drugs and supplies.

Learning Aid #3 Case management sites

Varies by country, but normally includes the following:

- Village Health Worker or Rural Health Post
- Dispensary/Health Center
- Hospital

Learning Aid #4	**Possible clinical presentations (by increasing order of severity)**
Uncomplicated malaria	Mostly fever, with or without accompanying mild symptoms; patient can swallow medications
Therapeutic failure	Continuing symptoms, 2 days after initiation of drug therapy
Severe/complicated malaria	frequently — cerebral malaria, seizures, hyper-parasitemia, severe anemia, hypoglycemia, acidosis less frequent — renal failure, shock, bleeding, hemoglobinuria, jaundice a special case — non-severe disease with intractable vomiting, operationally classified as severe/complicated because of the need for parenteral therapy

Learning Aid #5 **Table: Clinical situation and case management sites**

Clinical Situation	Case Management Sites		
	Village Health Worker or Post	Dispensary	Hospital
Uncomplicated Malaria			
Therapeutic Failure			
Severe/Complicated Malaria			

Learning Aid #6 Goals of therapy

Uncomplicated Malaria

- Diagnose clinically or with microscopic confirmation
- Eliminate/significantly reduce parasite densities
- Relieve symptoms
- Provide advice
- Refer to more central level if problem persists or complications develop

Therapeutic Failure

- As for uncomplicated malaria

In addition necessitates:

- Microscopic diagnosis
- Use of an effective second line antimalarial drug
- Follow-up

Complicated malaria:

- As for uncomplicated malaria

In addition necessitates:

- Microscopic diagnosis
- Parenteral administration
- Use of a rapid-acting antimalarial drug
- Supportive therapy for complications

Learning Aid #7 **Table: clinical situation, goal of case management, case management sites**

(+ = yes, possible available resources; - = no, not possible)

Clinical Situation	Goal of Case Management	Case Management Sites		
		VHW	Dispensary	Hospital
Uncomplicated malaria	- Diagnostic	+ [1]	+ [2]	+ [3]
	- Eliminate/reduce parasites	+	+	+
	- Relieve symptoms	+	+	+
	- Advice/education	+	+	+
	- Refer	+	+	+
Therapeutic failure	- Diagnostic (micro.)	-	+/-	+
	- Eliminate/reduce parasites	+	+	+
	- Relieve symptoms	+	+	+
	- Seek other causes of fever	+	+	+
	- Advice/education	+	+	+
	- Refer	+	+	+
	- Use 2nd-line drug	-	+	+
	- Follow-up	-	+/-	+
Complicated malaria	- Diagnostic (micro.)	-	+/-	+
	- Eliminate/reduce parasites	+	+	+
	- Relieve symptoms	+	+	+
	- Seek other causes of illness	+	+	+
	- Advice/education	+	+	+
	- Refer	+	+	+
	- Parenteral drug	-	+/-	+
	- Rapid acting drug	-	+/-	+
	- Supportive therapy	-	-	+

1 = clinical diagnosis only
2 = clinical, +/- microscope
3 = clinical plus microscope

Learning Aid #8 **Alternative way of classifying case management sites by therapeutic possibilities**

- Sites that cannot provide parenteral therapy (VHW and some dispensaries)
  - can treat uncomplicated malaria
  - therapeutic failures should preferably be referred due to frequent lack of microscopic diagnosis capabilities at this level
  - complicated malaria should be referred

- Sites that can provide therapy by intramuscular and subcutaneous routes (hospitals and most dispensaries)
  - can treat uncomplicated malaria
  - can treat therapeutic failures
  - can treat complicated malaria (with referral, after initial treatment of those patients who will require intravenous therapy and close monitoring)

- Sites that can provide intravenous therapy and supportive therapy (hospitals and some dispensaries)
  - can treat uncomplicated malaria
  - can treat therapeutic failures
  - can treat complicated malaria

Learning Aid #9 **Criteria to use to assess the suitability of antimalarial drugs and ancillary therapies**

Criteria should include, but are not limited to the following:

- Efficacy/existing and projected resistance
- Safety
- Rapidity of action
- Route of administration
- Availability
- Affordability (by patient, by health care system)
- Ease of usage/dosing regimen required for maximal efficacy
- Compliance (complexity of dosing regimen, cultural acceptance, taste, side effects, etc.)
- Training necessary for proper use
- Equipment necessary for proper administration or use

Learning Aid #10 **Criteria that vary most from setting to setting**

- Efficacy/existing and projected resistance
- Availability
- Affordability
- Compliance

Learning Aid #11 **Principal antimalarial drug options**

Key
PO = orally
SC = sub-cutaneous
IM = intermuscular
IV = intervenous

(Cost data from WHO, 1990)

DRUG	CRITERIA	COMMENTS
Chloroquine	Efficacy	- increasing resistance
	Route of administration	- PO, SC, IM, IV VHW, dispensary, hospital
	Safety	- good if PO (pruritus)
	Affordability	- $0.09/adult treatment
	Dosing	- 3 days; fair to poor compliance
	Remarks	- most widely used in Africa
Amodiaquine	Efficacy	- increasing resistance
	Route of administration	- PO; VHW, dispensary, hospital
	Safety	- hepatitis (agranulocytosis, pruritus)
	Affordability	- $0.14/adult treatment
	Dosing	- 3 days; fair to poor compliance
	Remarks	- no advantages; use not recommended by WHO

Quinine	Efficacy	- good for acute disease; problem with parasite recurrence
	Route of administration	- PO, IM, IV; dispensary, hospital
	Safety	- good (cinchonism, hypoglycemia)
	Affordability	- $1.00 - 1.50/adult treatment
	Dosing	- 3-7 days; poor compliance
	Remarks	- first choice for complicated malaria
Sulfadoxine-pyrimethamine (Fansidar)	Efficacy	- good, still little resistance
	Route of administration	- PO, IM; dispensary, hospital
	Safety	- good; some severe skin reactions
	Affordability	- $0.13/adult treatment
	Dosing	- 1 dose, good compliance
	Remarks	- preferred 2nd-line drug, candidate 1st-line drug where there is extensive chloroquine resistance

Tetracycline	Efficacy	- good, slow acting
	Route of administration	- PO; dispensary, hospital
	Safety	- poor; multiple side effects
	Affordability	- $0.25/adult treatment
	Dosing	- 7 days; poor compliance
	Remarks	- contra-indicated in children <8 years old and pregnant women
Mefloquine	Efficacy	- good
	Route of administration	- PO; dispensary maybe, hospital
	Safety	- good, but limited experience
	Affordability	- $1.92/adult treatment
	Dosing	- single dose, good compliance
	Remarks	- new drug, possible 1st-line drug in areas of chloroquine resistance

Halofantrine	Efficacy	- good; problems with absorption and dosing regimen
	Route of administration	- PO; dispensary maybe, hospital
	Safety	- good, but limited experience
	Affordability	- $5.31/adult treatment
	Dosing	- 3 doses in one day; fair to poor compliance
	Remarks	- new drug, high cost
Artemisinin	Efficacy	- good; problem with parasite recurrence
	Route of administration	- PO, IM, IV, suppositories; VHW, dispensary, hospital
	Safety	- good, but limited experience
	Affordability	- cost relatively low
	Dosing	- 3-7 days, poor compliance
	Remarks	- good choice for complicated malaria but new drug still needing further assessment

Learning Aid #12 **Factors for optimal case management of uncomplicated malaria by village health workers (VHW)**

(*classified according to goals of case management*)

A. Goal of case management: Diagnose (clinically or with microscopic confirmation)

Influencing factors:

- training of VHW in clinical diagnosis
- supply thermometer
- availability of VHW for consultation

B. Goal of case management: Eliminate or significantly reduce parasite densities

Influencing factors:

- response of infection to antimalarial drug of choice
- training of VHW in recommending and administering drug of choice
- provision of VHW with drug
- local availability of drug of choice (pharmacies or market)
- compliance of patient

C. Goal of case management: Relieve symptoms

Influencing factors:

- training of VHW in recommending and administering symptomatic treatment
- provision of VHW with drugs for symptomatic treatment
- local availability of drugs for symptomatic treatment (pharmacies or market)
- compliance of patient

D. Goal of case management: Provide advice

Influencing factors:

- training of VHW in patient education and communication skills

E. Goal of case management: Refer to dispensary or hospital if problem persists or complications develop

Influencing factors:

- training of VHW in clinical recognition of therapeutic failure or complications
- education and compliance of patient for notifying VHW of problem
- availability of a reference system

Learning Aid #13 **Drug(s) of choice for case management uncomplicated malaria by village health workers (VHW)**

For example:

Chloroquine

Pro: low cost; available; safe; works well if sensitive parasite; patients and workers are familiar with the drug

Con: increasing problem with drug resistance; need for multiple dosing (problem with compliance, inadequate dosing); patients in areas of resistance may have lost confidence

Sulfadoxine/pyrimethamine

Pro: good efficacy in areas of chloroquine resistance; single dose (excellent compliance); relatively low cost (50% more than chloroquine); available in most places

Con: side effects, allergic skin manifestations (some of them severe); premature use if used in areas with chloroquine sensitive parasites; widespread use might facilitate resistance

Learning Aid #14 **Advice/education VHWs should give on the administration of an antimalarial drug and ancillary therapy**

- How the medication and ancillary therapy is to be administered
- Cautions regarding its administration
- Possible side effects of the drug and need to notify provider of these side effects

Learning Aid #15 **Continuous surveillance of efficacy of drug therapy in the case management of uncomplicated malaria by village health workers**

- Report persistence of problems and side effects to dispensary or hospital immediately
- Perform simplified in-vivo tests, if possible

Learning Aid #16 **Association between malaria and anemia and the consequences on the choice of drug**

- Malaria is often accompanied by anemia (caused by hemolysis).
- Treatment with chloroquine, while improving or eliminating classical symptoms of malaria, such as fever, and therefore giving a therapeutic success, can still leave a residual infection that causes persistent anemia.
- Improvement in hemoglobin level after treatment with chloroquine was much less than that achieved after treatment with pyrimethamine/sulfadoxine in two studies in Malawi and Kenya (Bloland, 1993).
- This anemia can be aggravated by the next attack of malaria, thus contributing substantially to malaria-related morbidity and mortality.

Learning Aid #17 **Decision questions in need of further research in case management of uncomplicated malaria by village health workers**

- Efficacy of chloroquine, (clinical, parasitologic, and hematologic)
- Criteria for changing first-line drug
- Frequency of side effects with alternates to chloroquine
- Rapidity of emergence of resistance to pyrimethamine/sulfadoxine

Learning Aid #18 Practice and feedback exercise

For your assigned clinical situation and site of case management, address the following, as demonstrated in the previous session:

- Factors that are important for optimal case management
- Determination of drug of choice
- Determination of advice/education to be provided
- Identification of actions to take for continuous assessment of drug therapy efficacy
- Identification and ranking of decision questions in need of further research

Learning Aid #19 Application exercise

1. Review the products of the demonstration and the practice and feedback exercise.

2. Adapt these products to your own country for each of the clinical situations (acute malaria, complicated malaria, and therapeutic failure) and sites of case management (VHW post, dispensary, hospital). Be sure to address the following:
   - Factors that are important for optimal case management
   - Determination of drug of choice
   - Determination of advice/education to be provided
   - Identification of actions to take for continuous assessment of drug therapy efficacy
   - Identification and ranking of decision questions in need of further research

3. While adapting these products to your country's situation keep in mind the following:

   - There is a need to evaluate what proportion of patients various health care levels see and treat, and with what effectiveness. In particular, if the central levels, while able to manage severe malaria, see and treat only a small proportion of severe malaria patients, then an effort to reach the periphery has to be considered.

   - There is a need to evaluate the role of chloroquine as a first-line antimalarial drug. In particular, the appropriateness of relying on clinical improvement in the presence of a persistent parasitemia needs to be reassessed.

   - Policies on case management and drug use should be constantly monitored and reassessed in terms of their effectiveness. Important factors include: patterns of drug resistance, quantity and quality of care provided at the various levels, and communications between the various levels of the health care system.

Learning Aid #20 Key points of the session

1. Uncomplicated malaria, therapeutic failure, and complicated malaria can be present at rural health posts, dispensaries, and at hospitals.

2. The goals of case management differs according to the treatment site and the clinical situation.

3. The criteria used to assess the suitability of antimalarial drugs are efficacy, availability, affordability, and compliance.

4. The efficacy of antimalarial drugs on malaria symptoms, parasitemia, and associated malaria, must be continuously monitored to ensure optimal case management.

5. The adequacy of care at different sites should be carefully monitored and reassessed over time.

6. Malaria is often associated with anemia in Africa. Improvement in hemoglobin level after chloroquine treatment is less than that for treatment with sulfadoxine-pyrimethamine.

LESSON PLAN 4

MALARIA CASE MANAGEMENT IN THE HOME

OBJECTIVES: By the end of the session, participants will be able to–

1. State two elements to be included in well-formulated policy guidelines for home case management of malaria.
2. Compare health facility and home policy guidelines for case management of malaria.
3. Write draft guidelines on home case management for two possible contingencies using clinical and behavioral research.
4. Write draft policy guidelines on home case management based on clinical and behavioral research from their country.
5. Identify additional information necessary to complete the policy guidelines and steps to take to collect the necessary data.

METHODS: Discussion/lecture, demonstration, small group and country -team exercises

MATERIALS: Markers, flip-chart paper, learning aids, transparencies, tape

TIME: 8 hours

FACILITATOR ACTIVITIES:

Introduction **(time: 45 minutes)**

1. Present the objectives for the session (title page).

2. Show participants those sections of the policy outline to be addressed during this session.

   Learning Aid #1

3. Ask participants to bear in mind that a major share of malaria is being managed by families in their homes. Highlight the fact that it is estimated that only 1/3 of the population in Africa regularly seek care at health facilities.

4. Ask participants to explain why some governments hesitate to officially endorse "self care" in the home.

   Learning Aid #2

5. Explain that this ambivalence toward home care might explain why, in many countries,

   - there is insufficient data about how families manage malaria in the home, and the reasons for which they manage the malaria.

   - where data about home case management behaviors exist, policy makers are not always aware that these data exist, and they are not sure how to use them to make decisions.

6. Emphasize that to formulate malaria home policy guidelines, there is a critical need to understand the perspective of parents, families and communities regarding the management of children with malaria. Therefore, countries must–

   - Take better advantage of data that may have already been collected for other purposes (e.g., to plan behavior change interventions in the community).
   - Mobilize resources to conduct more policy-related behavioral research.
   - Use the resulting data to make policy decisions.

Demonstration **(time: 2 hours)**

1. Explain that the purpose of the demonstration is to show how data collected in a particular country for purposes other than formulating policy (1) can be used by policy makers to begin to formulate home policy guidelines; and (2) how these data can help identify additional data needed to formulate a comprehensive policy statement.

2. Ask participants to list and describe the major elements to be included in policy guidelines for home case management of malaria.

   Learning Aid #3

3. Remind participants that "health services" guidelines for malaria case management have previously been discussed.

   Ask participants to compare the "health services" and "home case management" guidelines, and to highlight the major differences between the two.

   Learning Aid #4

4. Explain that malaria home policy guidelines in Africa traditionally have been formulated according to two policy conditions or contingencies. Describe the two contingencies.

   Learning Aid #5

   Explain that countries use several criteria to decide which set of conditions is appropriate for them. Ask participants to "brain-storm" the different kinds of criteria commonly used by ministers of health.

   Learning Aid #6

5. Explain that during this demonstration we will examine an example of how home policy guidelines are formulated under one policy contingency. This will be referred to as "Policy Setting A."

   Explain that during the practice and feedback exercise we will address the second contingency, referred to as "Policy Setting B."

   Emphasize that both policy settings include recommendations for diagnosis, treatment and self-referral.

6. Explain that we will first examine some data from the Republic of Freepalu, a country where the "Policy Setting A" contingency is applicable.

   Learning Aid #7

7. Demonstrate how these data can be used to write policy guidelines on home case management.

   Learning Aid #8

8. Ask participants if they have this kind of information available in their countries.

   If yes, ask what methods were used to collect the information. Also ask participants if they have used this information to make policy decisions. If no, ask how feasible it is for countries to collect this information.

Practice and Feedback **(time: 2 hours)**

1. Explain that the purpose of this exercise is to practice using existing data in developing home case management policy guidelines for a hypothetical country, called "Malariahere", where the "Policy Setting B" contingency is applicable.

2. Explain the task.

   Learning Aid #9

3. Divide participants into four groups.

4. Assign facilitators to monitor the groups. Facilitators should do the following:
   - Review the task.
   - Inform participants of the time allotted for the exercise.
   - Arrange for the selection of a timekeeper and a note-taker.
   - Remain with their designated group throughout the exercise and provide feedback when necessary.

5. Reconvene the large group and ask selected groups to present their work. Encourage comments and questions from members of the other groups.

Application **(time: 2 hours, 30 minutes)**

1. Explain that each country's own experience and data will form the basis for developing home policy guidelines during this exercise.

2. Explain the task.

   Learning Aid #10

3. Divide the group into country teams.

4. Assign facilitators to monitor the groups. Facilitators should do the following:
   - Review the task.
   - Inform participants of the time allotted for the exercise.
   - Arrange for the selection of a timekeeper and a note-taker.
   - Remain with their designated group throughout the exercise and provide feedback when necessary.

5. Reconvene the group and ask selected teams to present their work. Ask for comment and questions.

Synthesis and summary **(time: 45 minutes)**

1. Ask participants to summarize the key points of the session.

   Learning Aid #11

2. Remind participants that operational research will be necessary to determine the degree to which policy guidelines are being executed as planned (i.e., identifying the difference between recommended and actual practice.)

3. Emphasize that the policy statement should be reviewed and modified periodically based on the results of this operational research.

4. Ask participants to post their products of the application exercise in the plenary hall.

5. Review the accomplishment of the session's objectives (title page).

LEARNING AIDS

Learning Aid #1 **The sections of the policy outline to be covered during this session**

F. Case management policy in the home
   1. diagnostic criteria to be used in the home

   2. treatment (only if encouraged)
      (a) antimalarial drug
         - antimalarial drug of choice, dosage and dosage schedule
         - source(s) of antimalarial
         - providers of care
         - cost of treatment

      (b) auxiliary/ancillary treatment
         - antimalarial drug of choice, dosage schedule
         - source(s) of antimalarial
         - providers of care
         - cost of treatment

   3. referral
      - signs and symptoms for seeking additional care with health services

Learning Aid #2 **Possible reasons for government hesitancy to endorse "self care" in the home**

- Concern that endorsement signals tacit approval for the acquisition of antimalarials from sources outside the formal health service delivery system.
- Lack of confidence in mothers' ability to diagnose and treat malaria (and other diseases) correctly.
- Legal restrictions concerning possession of certain drugs in the home.
- Distribution of poor quality drugs.

Learning Aid #3 **Elements of home case management policy guidelines**

Diagnosis	A description of the process followed by parents or family members in identifying whether a child has malaria
Treatment	A description of– • the precise antimalarial drug to be administered by the parent or family member • the precise ancillary therapy to be administered by the parent or family member • the precise moment when the therapy is to be administered • the recommended person to administer the therapy • the dosage and intervals at which the therapy is to be administered • the cost of the therapy • the recommended source of the therapy
Self-referral	A description of the circumstances under which parents and family members should seek care outside the home during or following administration of the recommended therapy

Learning Aid #4 Comparison between facility and home policy guidelines for malaria case management

Health services guidelines	Home case management guidelines
• Intended for use by health care workers	• Intended for use by parents and family members
• Include four components: diagnosis, treatment, education and referral	• Include three components: diagnosis, treatment and self-referral
• Diagnosis derived from clinical research and experience reflecting health professional perspective expressed in biomedical language familiar to the trained health care professional (e.g. uncomplicated malaria, complicated malaria, treatment failure) widely accepted by the professional community within and across different countries	• Diagnosis derived from behavioral research that reflects the perspective of parents and family members expressed in a language that is credible, understandable and recognizable to parents and family members (e.g., "hot body", "malaria that won't go away") vary from region to region within a country, and from country to country
• Treatment 1st and 2nd line antimalarials as indicated by clinical research ancillary therapy as indicated by clinical research moment at which health care worker is to begin administration of therapy or supervise administration of therapy by parent: limited to clinical consultation health care worker as primary administrator or supervisor of administration of therapy dosage and timing of intervals as indicated by clinical research cost dependent upon health system management recommended source of therapy: health care facility	• Treatment 1st and 2nd line antimalarials as indicated by clinical research ancillary therapy as indicated by clinical research and behavioral research moment at which parent or family member is to begin administration of therapy: can be before, during and after a clinical consultation or independent of consultation parent or family member as primary administrator of therapy dosage and timing of intervals as indicated by clinical research cost dependent upon market conditions for procurement by family members dependent upon availability and quality of alternative sources of therapy
• Referral dependent upon clinical cues to action for the health worker as indicated by clinical research; dependent upon a clinical consultation	• Self-referral dependent upon cues to action for self-referral as indicated by behavioral research; can occur before or after a clinical consultation, or completely independently of a clinical consultation

Learning Aid #5 **Two policy contingencies for formulating recommendations for home case management**

Policy Setting A: or Contingency A	• Make a diagnosis • Do not treat at home • Go directly to a health facility • Follow the instructions of the health care worker (this includes returning to the health facility if initial treatment fails)
Policy Setting B: or Contingency B	• Make a diagnosis • Treat at home. • Go directly to the health facility if initial treatment fails

Learning Aid #6 **Criteria for choosing a policy contingency for home case management**

- Population's access to health facilities
- Availability of drugs outside the formal health delivery system
- Competence of drug vendors to accurately prescribe medications and educate their clients about their use
- Competence of mothers to accurately assess and treat the child and recognize signs to seek care outside the home
- Previous experience of the government and the population with home therapy for malaria and other illnesses

Learning Aid #7 **Home case management data, Policy Setting A, Republic of Freepalu**

KAP Survey

- 66.5% of mothers reported "hot body" as a sign of malaria
- 22% of mothers reported "chills" as a sign of malaria
- 8% of mothers reported "vomiting" as a sign of malaria
- 41% of mothers reported "increased fever" as a sign that a child's status was worsening during a malaria episode
- 25% of mothers reported "refusal to eat" as a sign that a child's status was worsening during a malaria episode
- 11% of mothers reported "convulsions" as a sign that a child's status was worsening during a malaria episode
- 5% of mothers reported "vomiting" as a sign that a child's status was worsening during a malaria episode

Community Morbidity Survey

Showed that the mean duration of symptoms of malaria reported by the families of children who died was 2.8 days (range 1 - 5 days).

Country's 5-Year Health Plan

Antimalarials, when available, are provided free of charge at a health facility. When antimalarials are not available, a prescription may be obtained from the health worker.

Private Sector Prescription Drug Survey

The average cost for a full treatment of a malaria episode for a child under 5 years of age, using chloroquine procured from private pharmacy, is 100 FCFA.
The average cost for a full treatment of a malaria episode for a child under 5 years of age, using sulfadoxine-pyrimethamine procured from private pharmacy, is 500 FCFA.

WHO Malaria Case Management Guidelines

Treatment dose of chloroquine = 25 mg base/kg of body weight received at a dose of 10mg/kg initially, 10mg/kg the following day, and 5 mg/kg the next day.

Administration of an antipyretic, preferably paracetamol (or tylenol), is recommended in the case of axillary temperature of 38.0 C or a very feverish child. In addition, sponge baths are advised for a child with a very high temperature.

Learning Aid #8 **Home case management guidelines, Policy Setting A**
Republic of Freepalu

It is recommended that when a parent recognizes a child as having a "hot body", that the parent take the child to a health facility within 24 hours from onset of fever.

The full course of chloroquine treatment, when available, will be provided by the health worker free of charge. The health worker may administer the first dose of chloroquine to the child at the facility, or instruct the parent to administer the full course of treatment at home.

If chloroquine is not available at the health facility, the health worker will write a prescription so that chloroquine may be obtained at a public or private pharmacy.
The estimated cost of procuring chloroquine for a full treatment will be 100 FCFA.

A treatment dose of chloroquine is 25 mg base/kg of body weight. Chloroquine is to be administered orally at a dose of 10 mg/kg initially, 10mg/kg the following day, and 5 mg/kg the next day. Parents should monitor the child's response to treatment.

In the case of persistent or increased fever, refusal to eat, vomiting, and/or convulsions, the child should be taken to the health facility for further examination by the health worker. If necessary, sulfadoxine-pyrimethamine (S-

P), the second line drug of choice, will be provided by the health worker, or a prescription for obtaining S-P at a public or private pharmacy will be written. The estimated cost of procuring S-P for a full treatment will be 500 FCFA.

The health worker may administer the single dose of S-P to the child at the facility or instruct the parent to administer treatment at home. A treatment dose of S-P is 1.25 mg of pyrimethamine per kg of body weight. S-P is to be administered in a single oral dose.

Parents should continue to monitor the child's response to treatment.

A sponge bath with tepid water is recommended for a very feverish child.

Learning Aid #9 Practice and feedback exercise

1. In this exercise you will be developing recommendations for home case management for Malariahere, a hypothetical country where the "Policy Setting B" contingency is applicable. The guidelines must be written in the context of parents making a diagnosis, treating at home, and going directly to the health facility if initial treatment fails.

2. Review the data from a variety of sources in Malariahere (included below).

3. Following the example from the demonstration, write policy guidelines on home case management in accordance with the "Policy Setting B" contingency following the outline provided below.

4. Be prepared to present your guidelines to the group.

Outline:

1. Signs and symptoms indicating malaria.
2. Where to obtain medications and at what cost.
3. How to treat (antimalarials and ancillary therapy).
4. Signs and symptoms for seeking additional care.

Data:

KAP Survey

- 75% of mothers reported "hot body" as a sign of malaria
- 25% of mothers reported "extreme fatigue" as a sign of malaria
- 8% of mothers reported "headache" as a sign of malaria
- 51% of mothers reported "hot body that won't go away" as a sign that a child's status was worsening during a malaria episode
- 20% of mothers reported "increased thirst" as a sign that a child's status was worsening during a malaria episode
- 9% of mothers reported "general malaise" as a sign that a child's status was worsening during a malaria episode

- 5% of mothers reported "vomiting" as a sign that a child's status was worsening during a malaria episode

Community Mortality Survey

Showed that the mean duration of symptoms of malaria reported by the families of children who died was 2.8 days. (range 1 - 5 days).

Country's 5-Year Health Plan

Antimalarials, when available, are provided free of charge at a health facility. When antimalarials are not available, a prescription can be obtained from the health worker.

Antimalarials are available at a minimal cost from village health workers.

Drug Survey

The average cost of a full treatment of a malaria episode for a child under 5 years of age, using chloroquine procured from private pharmacy, is 250 FCFA.

The average cost of a full treatment of a malaria episode for a child under 5 years of age, using sulfadoxine-pyrimethamine procured from private pharmacy, is 700 FCFA.

The average cost of a full treatment of a malaria episode for a child under 5 years of age, using chloroquine procured from a village health worker, is 100 FCFA.

The average cost of a full treatment of a malaria episode for a child under 5 years of age, using sulfadoxine-pyrimethamine procured from a village health worker is 350 FCFA.

WHO Malaria Case Management Guidelines

Treatment dose of chloroquine = 25 mg base/kg of body weight received at a dose of 10mg/kg initially, 10mg/kg the following day, and 5 mg/kg the next day.

Administration of an antipyretic, preferably paracetamol, is recommended in the case of axillary temperature of 38.0 C or a very feverish child. In addition, sponge baths are advised for a child with a very high temperature.

Learning Aid #10 Application exercise

1. In this exercise you will be developing home policy guidelines for your own country. These policy guidelines must be written according to the policy contingency of your country (A or B).

2. Consider diagnostic, treatment, and self-referral information from a variety of sources in your country.

3. Write draft guidelines based on the existing information. Follow the example of the guidelines written during the demonstration and practice/feedback exercise.

   Outline
   1. Signs and symptoms indicating malaria.
   2. Where to obtain medications and at what cost.
   3. How to treat (antimalarials and ancillary therapy).
   4. Signs and symptoms for seeking additional care.

4. Identify additional information you will need to collect to complete the home case management policy guidelines, and describe the steps you will take to collect it.

Learning Aid #11 **Key points of the session**

1. The development of guidelines for managing malaria in the home is a complex undertaking that must be carried out by policy makers in accordance with the particular political, legal, social and cultural circumstances of each country.

2. Two major policy contingencies are present in most African countries. Home policy guidelines must be developed in accordance with the set of conditions that are applicable in different settings.

3. Although policy settings will vary from country to country, all guidelines will include recommendations for diagnosis, treatment and self-referral.

4. Data from a variety of sources must be used to develop appropriate guidelines. Behavioral and clinical research are necessary to develop these guidelines. Analyzing existing data should be the first step in drafting home case management guidelines. In most cases, additional data will need to be collected to complete the recommendations.

5. Policy-related operational research will be necessary to modify recommendations as circumstances change over time.

LESSON PLAN 5

STRATEGY DEVELOPMENT FOR CASE MANAGEMENT OF MALARIA

OBJECTIVES: By the end of the session, participants will be able to–

1. Identify six factors that influence the development of a case management strategy.

2. Explain the rationale and the potential consequences of a strategy that adopts home case management as the priority intervention.

3. Explain the rationale and the potential consequences of a case management strategy that adopts health services case management as the priority intervention.

5. Propose a case management strategy for your country.

METHODS: Discussion, demonstration, country case studies, small group and country team exercises

MATERIALS: Learning aids, flip chart paper, markers, transparencies

TIME: 7 hours, 30 minutes

FACILITATOR ACTIVITIES:

Introduction **(time: 45 minutes)**

1. Present the objectives for the session (title page).

2. Show participants those sections of the policy outline to be addressed during this session.

   Learning Aid #1

3. Remind participants that in the preceding sessions we discovered that —

   - The majority of malaria cases are treated at home. (e.g., KAP Survey, Togo)
   - The majority of childhood deaths due to malaria occur in the community. (e.g., Gambia, Togo)
   - The small percentage of patients who are seen in health facilities do not always benefit from correct case management. (e.g., Nigeria)

   Learning Aid #2

4. Explain that it is the responsibility of the ministry of health to ensure that parents and other family members correctly manage malaria illness in the home, and to improve the case management practices of health workers.

   Explain that it is important to decide upon the best strategy to fulfill these responsibilities, and to state this strategy in policy guidelines.

5. Explain that choosing a strategy to improve case management in the home and in health services is not a simple decision. It demands consideration of a variety of factors and requires rational sequencing of events to achieve improved service coverage and quality of care. It most countries, it also involves establishing priorities.

   Ask participants to cite some of the factors that need to be taken into consideration in developing a strategy to improve case management in the home and in health services.

   Learning Aid #3

Demonstration: **(time: 2 hours)**

1. Explain that the purpose of this demonstration is to examine a case study from the Republic of Freepalu, a hypothetical country whose government is re-evaluating its own case management strategy.

2. Distribute part 1 of the case study. Ask one participant to read the case study aloud.

   Learning Aid #4

3. Distribute the Ministry of Health's rationale.

   Learning Aid #5

   Ask another participant to read aloud the rationale for the ministry's choice of home case management as the top priority of its national malaria control program.

4. Inventory the number of countries attending the workshop that have opted for home case management as their top priority. Solicit additional elements from these countries that could be used to support Freepalu's choice of home case management as top priority based on experience in their own countries.

5. Distribute Part 2 of the case study. Ask one participant to read the case study aloud.

   Learning Aid #6

6. Distribute the major findings and recommendations of the evaluation team.

   Learning Aid #7

   Ask another participant to read the findings and recommendations aloud.

7. Inventory the number of countries attending the workshop that have opted for health services case management as their top priority. Solicit additional elements from these countries that could be used to support the evaluation team's proposed of a shift in Freepalu's strategy for malaria case management.

8. Ask participants the following question:

   Should a manager direct the program's resources to first improving case management in health services, or are these resources better used by first improving case management in the home? Can both strategies be adopted at once?

   Allow those participants with opposing points of view sufficient time to discuss and debate their positions. Participants should be challenged to defend their position in this debate.

Practice and Feedback **(time: 2 hours)**

1. Tell participants that they will be asked to propose a feasible and realistic case management strategy for their respective countries.

   Explain that before proposing a strategy, each country should consider how they can defend this decision on a technical basis, which has been discussed in the previous exercise. Equally important will be to anticipate the implications of such a policy decision for the minister of health, particularly if it represents a change from existing policy.

2. Explain that the purpose of the practice and feedback exercise is to discuss the consequences of changing the national malaria policy, using an example from the hypothetical country of Freepalu.

3. Distribute and explain the task.

   Learning Aid #8

4. Divide the participants into four groups.

5. Assign facilitators to monitor the groups. Facilitators should do the following:
   - Review the task.
   - Inform participants of the time allotted for the exercise.
   - Arrange for the selection of a timekeeper and a note-taker.
   - Remain with their designated group throughout the exercise and provide feedback when necessary.

6. Reconvene the group and ask a representative from each group to present their recommendations.

   Encourage questions and comments from members of the other groups

Application **(time: 2 hours)**

1. Explain that the purpose of the application exercise is for each country to draft a strategy for case management of malaria for their national program.

2. Distribute and explain the task.

   Learning Aid #9

3. Divide participants into their country teams.

4. Assign facilitators to monitor the teams. Facilitators should do the following:
   - Review the task.
   - Inform participants of the time allotted for the exercise.
   - Arrange for the selection of a timekeeper and a note-taker.
   - Remain with their designated team throughout the exercise and provide feedback when necessary.

5. Reconvene the group and ask representatives from selected country teams to present their recommendations.

   Encourage questions and comments from members of the other country teams.

Summary/Synthesis **(time: 45 minutes)**

1. Ask participants to summarize the key points of the session.

   Learning Aid #10

2. Ask if participants have any questions regarding this session and previous sessions before moving on to the next session on writing policy guidelines.

3. Ask participants to post the results of their application exercise in the plenary hall.

4. Review the accomplishment of the session's objectives (title page).

LEARNING AIDS

Learning Aid #1 **Sections of the policy outline to be covered during this session**

C. Case management strategy (*priorities*)
   1. health services case management
   2. case management in the home

Learning Aid #2 **Malaria case management and mortality summary**

- KAP survey conducted in Togo showed that of 507 children who had experienced a fever episode in the 15 days prior to the survey, 80% were not seen at a health facility and 83% received a treatment in the home.

- Other data indicate that the majority of malaria attributable childhood deaths occur in the community: 23 of 25 deaths in Gambia, and approximately 34 of 35 deaths in Togo.

- Additional data indicate deficiencies in the quality of case management in health facilities. For example, a study carried out in 1989 in 30 health facilities in Nigeria showed that although the majority of health agents knew how to diagnose correctly a child with fever, only 47.5% administered oral chloroquine, and only 14.9% advised the mother to return to the health clinic if the child's condition did not improve.

Learning Aid #3 **Factors in developing a strategy for improving case management in the home and in health services**

- Political will and commitment to a national malaria control program.
- Level of development of the health system infrastructure.
- Availability of human, financial and material resources through government/external channels.
- Confidence of health personnel in communities' ability to provide appropriate health care.
- Confidence of communities in health system's ability to provide appropriate health services.
- Community/private sector experience in participating in health care activities.
- Cost effectiveness of the strategy (i.e., which strategy prevents the greatest number of deaths in children for the least money and fewest personnel).

Learning Aid #4 **Case study: Ministry of Health, Republic of Freepalu, Part 1 *(handout)***

In January 1990, the Ministry of Health of the Republic of Freepalu finalized its national policy on malaria control. The Ministry identified mortality reduction as its primary goal, set a mortality reduction objective of 25%, and selected case management as its primary intervention to achieve that objective. In this policy document, the Ministry states that "Improving case management of malaria in the home will be the top priority of the national malaria control program." The government also affirmed its commitment to improving case management of malaria in health facilities by identifying this as its second priority.

Learning Aid #5 **Ministry of Health, Freepalu: Rationale for the choice of home case management as #1 priority**
(handout)

1. Most childhood disease and death due to malaria occur in the community. The formal health system sees only a minority of these sick children.

2. The cost of preventing deaths in the community is probably lower than preventing deaths in the health facility.

3. The government has a strong commitment to primary health care. Its hope is to make health services available and affordable to the greatest number of people, particularly at the district level.

4. Existing health facilities are accessible to only 60% of the population, and there are no plans to construct and staff new facilities.

5. A donor agency has made a significant amount of financial assistance available to encourage the development of information, education and communication programs to improve malaria case management in the community.

6. Very little has been done in recent years in the periphery to improve the health and well-being of the community.

Learning Aid # 6 **Case Study, Republic of Freepalu, Part 2**
(handout)

Soon after the policy document was signed by the Minister, a national program plan was designed. Particular attention was given to educating the public about the importance of malaria as a major public health problem. The MOH informed the public through the mass media of what actions they could take to diagnose and treat the disease, and when to refer the child to the nearest health facility. Educational programs also emphasized the importance of personal protection and vector control measures. Implementation of the plan began in 1991.

In December 1992, the Minister of Health requested an evaluation of the malaria control program. The evaluation was conducted over a one month-period at the end of the year. There were five major findings and three recommendations from this evaluation.

Learning Aid #7 **Findings and recommendations of the evaluation team, Republic of Freepalu**
(handout)

• Findings

1. Adequate referral sources were unavailable for cases who did not respond to home therapy. Observations of health workers indicated major deficiencies in appropriate case management in health facilities.

2. Health personnel were not reinforcing the home therapy messages that mothers heard through the mass media. In some instances, the messages were contradictory.

3. Community health workers (CHWs) have increased the population's access to antimalarials. However, CHWs are unable to provide effective malaria case management.

4. Health workers reported decreased use of health facilities by parents and family members. The major reason, as reported by a sample of mothers, was the unavailability of antimalarial drugs and the inability of health workers to communicate the appropriate treatment instructions.

5. There were some indications that antimalarials were being overused, which might prompt greater parasite resistance to antimalarials.

• Recommendations

The evaluation team proposes that the Ministry of Health consider modifying its current strategy so that greater attention can be directed toward improving case management in health facilities throughout the country. The rationale for the proposed shift in strategy follows.

1. Redirection of efforts to improving case management in health facilities makes best use of those existing resources (health workers, commodities, supplies, etc.) over which the Ministry of Health has control and obvious responsibility.

2. Health facilities are the cornerstone of the health care system.

   - They must be able to provide a good example of case management for others entrusted with care of the population (e.g., CHW's) and be the site of training for these alternative sources of care.
   - They must be able to respond to the needs of the population by having personnel who are well trained, supervised and equipped to receive sick children who are referred from the community.
   - They must be credible sources of care. Credibility also improves the chances that more patients will use the services.
   - Health workers must be convinced of the benefits of treatment guidelines to support similar information coming from other sources (e.g., mass media).

3. Childhood deaths are prevented in an efficient manner by first preventing death in those cases who come for treatment.

Learning Aid #8 Practice and feedback exercise

The Minister of Health of the Republic of Freepalu has read the report of the evaluation team and is considering changing the country's malaria strategy from emphasizing home case management to case management in health services. He has requested your input as he continues his deliberations about this policy decision. Specifically, he would like to know the following:

1. Will a shift in strategy be acceptable to the donor community, health professionals in the government, and community leaders?
2. Can the government financially afford such a shift in strategy? Are the human, technical and material resources available to make the policy change smoothly?
3. Will a new strategy be effective in improving the quality of care, the use of services, and reducing morbidity and mortality?
4. Is such a shift technically and administratively feasible?
5. Would it be possible to embrace both strategies at once? How quickly can a shift be made from one strategy to the next?

Prepare succinct answers to these questions to be presented to the other groups.

Learning Aid #9 **Application exercise**

For your country's situation:

1. Develop a case management strategy that is appropriate for your country. The strategy should include case management in the home and in health services as two separate priorities.

2. Present a rationale for your strategy and justify the ordering of home vs health services case management.

3. If this strategy signals a change from your existing strategy, prepare responses to the five questions the Minister of Health from Freepalu posed to his advisors.

   1) Will a shift in strategy be acceptable to the donor community, health professionals in the government, and community leaders?

   2) Can the government financially afford such a shift in strategy? Are the human, technical and material resources available to make the policy change smoothly?

   3) Will a new strategy be effective in improving the quality of care, the use of services, and reducing morbidity and mortality?

   4) Is such a shift technically and administratively feasible?

   5) Would it be possible to embrace both strategies at once? How quickly can a shift be made from one strategy to the next?

Learning Aid #10 **Key points of session**

- Ministries of health must develop an appropriate case management strategy to achieve their mortality reduction objectives. This strategy should emphasize either case management in health services or in the home as the priority intervention.
- In the face of limited resources, the case management strategy may have to set priorities based on a variety of factors unique to each country. Some of these factors include political will, level of development of the health system infrastructure, availability of resources, confidence of the community in health services' ability, previous experience of community, and cost effectiveness of strategy.
- Case management in the home is often chosen as the priority intervention because most childhood disease and death due to malaria occur in the community, and existing health services are not accessible to the entire population.
- Case management in health services is often chosen as the priority intervention because it makes use of existing resources over which the ministry of health has control. Health services is also where childhood deaths are prevented in an efficient manner by first preventing deaths in those cases who came for treatment.
- Countries should be flexible as they set their priorities. They should also be willing to reevaluate and change strategies if necessary.

LESSON PLAN 6

A PROPOSAL FOR NATIONAL POLICY GUIDELINES FOR MALARIA CONTROL PROGRAMS

OBJECTIVES: At the end of the session the participants will be able to–

1. Define a policy guideline.
2. Describe the importance of policy guidelines for malaria control.
3. Write policy guidelines for their country that incorporate major proposals made earlier in the workshop regarding case management.
4. Propose steps in completing the policy guidelines and in gaining approval from the minister of health.

METHODS: Discussion, demonstration, country team written exercises

MATERIALS: Learning aids, markers, paper, pencils, flip-chart paper, transparencies, products from previous sessions' exercises

TIME: 8 hours

FACILITATOR ACTIVITIES:

Introduction **(time: 30 minutes)**

1. Present the objectives for the session (title page).

2. Explain that policy guidelines are a statement of a proposed course of action to be taken to reach a goal.

   Briefly review previous discussions concerning the primary goal of a national malaria control program (mortality reduction) and the primary intervention (case management) available for attaining the goal.

3. Explain that the guidelines that will be written during this session summarize the work done in country groups during the application exercises of previous sessions.

4. Explain that the guidelines should be incorporated into a comprehensive policy statement on malaria control that includes, not only case management, but prevention guidelines, and a preamble with historical and epidemiologic information on the program. Explain that guidelines on prevention will be written at the end of the workshop, after completion of the three sessions on prevention.

5. Ask participants the following:

   - Why is it important to establish policy guidelines for your national malaria control program?

     Learning Aid #1

- What is the administrative advantage of written policy guidelines for case management?

Learning Aid #2

Demonstration **(time: 1 hour, 30 minutes)**

1. Explain that the purpose of this demonstration is to show how to write selected components of the policy guidelines, using the Central African Republic as an example.

2. Distribute the "Policy Guidelines for a Malaria Control Program". Review the three components of the guidelines that will be written during this session. Explain that the policy outline that has been followed during each session can be used to help complete the policy guidelines.

Learning Aid #3

Remind participants that this form is just an example of how to write policy guidelines. Guidelines must be discussed with other decision makers and be adapted to the particular circumstances of each country.

Ask participants if they have any questions regarding the format of the form.

3. Demonstrate how to write selected components of the guidelines. Use the Central African Republic as an example for completing the introduction and the section on case management in health services.

Learning Aid #4

4. Ask a representative of a country to give an example of what he/she would write in the introduction.

5. Ask another participant to state what he/she would write for sections 1 & 2 of case management the home.

6. Ask participants to comment on the three country examples.

7. Ask participants if they have any questions and comments before breaking into country teams.

(*NOTE: There is no practice and feedback exercise for this session*)

Application **(5 hours)**

1. Explain that the purpose of this exercise is for each country to draft its own policy guidelines based on the work they completed in previous sessions (particularly in the application exercise of each lesson plan).

2. Divide the participants into their country teams.

3. Assign facilitators to monitor the country teams. Facilitators should do the following:
   - Review the task.
   - Inform participants of the time allotted for the exercise.
   - Arrange for the selection of a timekeeper and a note-taker.
   - Remain with their designated team throughout the exercise and provide feedback when necessary.

4. Explain that each country team should complete the form on policy guidelines (learning aid #3) and should be prepared to present their work to other teams.

5. Following the work in the country teams, ask each team to join with two other teams to discuss the results of their work. Ask participants to focus on both the similarities and differences in their policies.

Synthesis and Summary **(1 hour)**

1. Reconvene the participants and ask them to comment on the similarities and differences observed among the policy guidelines for case management from different countries.

   Summarize possible reasons for these differences and similarities.

2. Explain that upon return to their countries, participants must review and revise the policy guidelines and draft a comprehensive policy statement for their malaria control program.

3. Ask participants to describe the steps they might take in drafting the policy statement and in gaining approval for the policy from the minister of health.

   Learning Aid #5

4. Explain that the policy guidelines on prevention of malaria will be written at the end of the last session on prevention.

5. Ask participants to summarize the main points of this session.

   Learning Aid #6

6. Review the accomplishment of the session's objectives (title page).

LEARNING AIDS

Learning Aid #1 **Importance of establishing policy guidelines**

- Serves as the foundation of the national malaria control program
- Provides instructions to health care providers on case management of patients and prevention strategies
- Offers a rationale for the allocation of resources

Learning Aid #2 **Administrative advantage of written policy guidelines (and eventually a comprehensive national policy statement)**

- To allow all potential partners and providers to know what is expected of them and what to expect from the government regarding malaria control.

  The public sector depends upon the government for resources.

  The private sector should be aware of policies so they can join the public sector in achieving the goal of the program.

  The consumers depend upon others within and outside the health system for guidance to undertake the proper behavior and receive the best treatment.

- To provide a systematic framework for planning, implementing, and evaluating the national malaria control program. Evaluation provides data that can be used to modify policy goals, interventions, and strategies.

Learning Aid #3 Policy guidelines on malaria control

The following suggests the type of technical guidelines a program might develop that summarizes important policy decisions, and that can be included in a comprehensive malaria control policy statement.

INTRODUCTION

1. The goal(s) of the national malaria control program is (are) to _____

_____

_____.

2. The primary intervention for attaining this goal is _____

_____.

3. The national malaria control program gives first priority to (choose a, b,or c)

_____ and second priority to (choose a, b, or c) _____.

(a) case management in health services
(b) case management in the home
(c) equal importance to both case management in health services and in the home

CASE MANAGEMENT POLICY IN HEALTH SERVICES

A. ***For cases of uncomplicated malaria:***

1. The providers of case management for uncomplicated malaria are to include _____
_____.

2. The case management services to be provided, by type of provider, are to include _____
_____.

3. The diagnostic criteria for non-complicated malaria consist of _____
_____.

4. The antimalarial drug of choice is _____
_____, which should be administered according to the following dosage schedule _____
in the following manner _____.

5. It is recommended that this antimalarial be procured from _____

_____.

6. In addition to the antimalarial drug, the ancillary therapy of choice is

_____, which should be administered according to the following dosage schedule _____

in the following manner _____.

7. It is recommended that these ancillary medications be procured from

_____.

8. The advice to give each parent or family member during a clinical consultation is to include _____

_____

_____.

9. A child with malaria should be referred when (the criteria for referral):

_____

_____.

Follow-up care is to consist of_____

_____.

10. The cost of treatment is _____

_____.

These costs are to be incurred by _____.

B. ***For cases of therapeutic failure:***

1. The providers of case management of cases of therapeutic failure are to include _____

_____.

2. The case management services to be provided, by type of provider, are to include _____

_____.

3. The diagnostic criteria for therapeutic failure consist of _____

_____.

4. In the case of therapeutic failure, the antimalarial drug of choice is _____ , which should be administered according to the following dosage schedule _____ _____, in the following manner _____.

5. It is recommended that this antimalarial be procured from _____ _____.

6. In addition to the antimalarial drug, the ancillary therapy of choice is _____, which should be administered according to the following dosage schedule_____ in the following manner _____.

7. It is recommended that these ancillary medications be procured from _____ _____.

8. The advice to give each parent or family member during a clinical consultation is to include _____ _____.

9. A child with malaria should be referred when (the criteria for referral) _____

_____.

Follow-up care is to consist of _____

_____.

10. The cost of treatment is_____

These costs are to be incurred by _____.

C. ***For cases of complicated malaria:***

1. The providers of case management for complicated malaria are to include _____

_____.

2. The case management services to be provided, by type of provider, are to include_____

_____.

3. The diagnostic criteria for complicated malaria consist of _____

_____.

4. For complicated/severe malaria, the antimalarial drug of choice is _____, which is to be administered according to the following dosage schedule_____ _____ in the following manner _____.

5. It is recommended that this antimalarial be procured from _____ _____.

6. In addition to the antimalarial drug, the ancillary therapy of choice is _____, which should be administered according to the following dosage schedule _____ _____, in the following manner _____.

7. It is recommended that ancillary medication be procured from _____ _____.

8. The advice to give each parent or family member during a clinical consultation is to include_____ _____.

9. A child with malaria should be referred when (the criteria for referral) _____.

   Follow-up care is to consist of _____ _____.

10. The cost of treatment is _____

    and is to be incurred by _____.

CASE MANAGEMENT OF FEBRILE PATIENTS IN THE HOME*

1. Case management of febrile children in the home is defined as_____
_____.

2. The criteria used to diagnose malaria in the home is the following:

_____

_____.

3. The antimalarial drug of choice to be administered in the home* is _____
_____, which should be given according to the following dosage schedule: _____

_____.

This drug should be administered by _____

(caretaker). This antimalarial can be procured from _____

at a cost of _____ for a full treatment.

** NOTE: For the countries discouraging the use of antimalarials in the home without first visiting a health facility, declare for #3 that malaria/fever cases in the home must go to a health facility for case management. These countries may conclude their case management guidelines at this point.*

4. In addition to antimalarials, the febrile child should receive ancillary therapy consisting of _____.
This therapy should be given by _____
_____ (appropriate caretaker). This therapy should be administered according to the following dosage schedule:_____
_____.
This therapy can be obtained from _____
at a cost of _____ for a full treatment.

5. Parents should seek care from health services during or at the conclusion of drug and ancillary therapy when _____
_____
_____(signs and symptoms of a worsening condition).

PREVENTION (*This section of the policy guidelines should be written after the sessions on prevention have been completed*)

Vector Control

1. Vector control is/is not an intervention to be endorsed by our national malaria control program. *(circle response)*

   The strategies to be promoted are _____

   _____

   _____(e.g., larviciding, source reduction, residual spraying).

2. The rationale for promoting each of the above strategies is _____

   _____

   _____.

3. *Please describe where each of the vector control strategies will be applied, under what conditions, how it will be managed, and by whom.*

   _____

   _____

   _____

   _____.

Chemoprophylaxis

1. Chemoprophylaxis is/is not an intervention to be endorsed by the national malaria control program. *(circle response)*

2. For those countries selecting this intervention, the target group(s) is/are _____

   The rationale for chemoprophylaxis is _____.

3. The antimalarial(s) drug of choice to be administered is/are _____, which should be administered according to the following dosage schedule: _____.

4. This drug can be procured from _____, at a cost of _____.

Personal Protection

1. Personal protection is/is not an intervention to be endorsed by the national malaria control program. *(circle response)*

   The strategies to be promoted are _____

   _____

   _____(e.g., bednets/curtains (impregnated or not), insect repellant).

2. The rationale for promoting each of the above strategies is _____

   _____

   _____.

3. *Please describe where each of the personal protection strategies will be applied, under what conditions, how it will be managed, and by whom.*

   _____

   _____

   _____

   _____.

Learning Aid #4 **Examples from the Central African Republic's policy guidelines**

- The goal of the malaria control program is to reduce mortality due to malaria.
- The priority interventions are case management of patients, and chemoprophylaxis of pregnant women.
- The case management strategy will be as follows: Health services case management will receive primary emphasis. Case management in the home will be promoted on the condition that (1) the performance of health workers is of a quality sufficient to ensure that back up support can be provided to parents and family members when they seek care outside the home; and (2) the availability of chloroquine is improved.

A. For cases of uncomplicated malaria:

1. The providers of case management include the following:
   A. At the community level:
      - village health workers (VHW)
   B. At the health facility level:
      - nurses
      - midwives
      - technical health agents
      - doctors
      - pharmacists
   C. At the private level:
      - nurses
      - midwives
      - technical health agents
      - doctors
      - pharmacists

2. The care to provide consists of diagnosis, treatment, advice/education, and referral.

Learning Aid #5 **Steps on completing the policy statement and in gaining approval by the minister of health**

1. Meet with staff to discuss workshop and the draft policy guidelines.
2. Meet with private and public sector representatives (chief medical officers, pharmacists, medical and nursing school professors, private voluntary organizations) to discuss policy guidelines.
3. Locate any data or information necessary to complete policy guidelines and/or organize operational research studies to gather information.
4. Reach consensus with key decision makers on the policy guidelines for malaria control.
5. Incorporate guidelines into a comprehensive policy statement that also includes background information on the program, epidemiology of malaria, etc.
6. Distribute policy statement to key decision makers and revise according to their comments.
7. Submit policy statement to the minister of health for approval.
8. Distribute approved policy statement on malaria control to all providers of public and private health services.
9. Plan when the policy statement will be reviewed for any necessary revisions.

Learning Aid #6 Key points of the session

- Policy guidelines are a statement of the proposed course of action to be taken to reach a goal. Policy guidelines for malaria control state who the providers of case management are, the type of antimalarial drugs and ancillary treatment to use in health services and in the home, the cost of treatment, and guidelines for education of caregivers and referral of patients. The guidelines should also summarize malaria prevention methods.
- Policy guidelines serve as the foundation for the national malaria control program, provide instructions to health providers, and offer a rationale for the allocation of resources.
- A policy statement summarizing the guidelines needs to be approved by the ministry of health, as well as clinical and public health sectors, to ensure broad commitment and ownership.
- Policy should be reviewed and revised periodically.

LESSON PLAN 7

MALARIA PREVENTION: APPROACHES AND STRATEGIES

OBJECTIVES: By the end of the session, participants should be able to–

1. Cite reasons why prevention is a necessary adjunct to malaria case management.
2. List five principal approaches to malaria prevention and their corresponding strategies.
3. Discuss selected countries' experiences with different malaria prevention strategies.
4. Formulate key criteria to use for evaluating prevention strategies.
5. Evaluate three prevention strategies (source reduction, larviciding, and residual insecticide spraying) for inclusion in their country's policy on malaria control.

METHODS: Discussion, demonstration, small group and country team exercises

MATERIALS: Flip-chart paper, transparencies, markers, learning aids

TIME: 8 hours

FACILITATOR ACTIVITIES:

Introduction **(time: 1 hour, 30 minutes)**

1. Explain that the remaining sessions in the workshop will address the second major intervention for malaria control: prevention. Remind participants that the goals of malaria prevention are to decrease mortality and morbidity and to decrease transmission.

2. Present the objectives for the session (title page).

3. Show participants those sections of the policy outline to be covered during this session.

   Learning Aid #1

4. Ask participants to cite reasons why prevention is a necessary adjunct to case management for malaria control in Africa.

   Learning Aid #2

5. Ask participants to list five major approaches to malaria prevention and their corresponding strategies.

   Learning Aid #3

6. Ask participants to identify the prevention strategies that are being used in their countries, and to indicate the geographic extent of each strategy (e.g., urban, number of provinces, study area, pilot project, etc.). Record the information in the table provided.

   Learning Aid #4

7. For each of the strategies, ask selected participants to describe their country's experience with the strategy by asking the following questions:

   - Why did you choose this strategy? (rationale)
   - Has the strategy been successful?
     - If yes, why? (determinants of success)
     - Is it still continuing? (sustainability)
     - If no, why not? (determinants of failure)
   - What is the level of interest and cooperation of the community(ies) regarding this strategy?
     - Did the community(ies) actively participate in the planning of the strategy?
     - Did the community(ies) actively participate in the implementation of this strategy?

   Record responses on the table provided.

   Learning Aid #5

8. Explain that these responses demonstrate that there are many factors, or criteria, that influence the suitability of different prevention strategies for inclusion in a national policy on malaria control.

   Ask participants to review the completed table and formulate key criteria that should be used to evaluate the suitability of a prevention strategy.

   Learning Aid #6

9. Summarize these criteria and the different prevention strategies in a table.

   Learning Aid #7

Demonstration **(time: 1 hour, 30 minutes)**

1. Explain that the purpose of this demonstration is for participants to evaluate the suitability of two prevention strategies--larviciding and source reduction--according to the criteria just defined.

2. Distribute the handout "Rationale for larviciding and source reduction." Ask one participant to read aloud the rationale.

   Learning Aid #8

3. Distribute the handout "Problems with larviciding and source reduction." Ask another participant to read aloud the problems.

   Learning Aid #9

5. Ask participants to complete the table "Criteria for evaluating prevention strategies", rating criteria as H (High), M (Moderate), or L (Low). Explain that high meets the criteria often, moderate meets the criteria sometimes, and low seldom meets the criteria.

   Learning Aid #10

   Draw participants' attention to the fact that many ratings are estimates because of lack of experience, under controlled-conditions, with these strategies. Many programs include these strategies in their malaria control policies and implement them partially without an evaluation of the results.

6. Ask participants to determine whether larviciding and source reduction should be included in a policy on malaria control, based on the information in the table. Ask participants to justify their decisions.

Practice and Feedback **(time: 2 hours)**

1. Explain that the purpose of this exercise is to allow participants to examine another prevention approach--destroying the adult mosquito--and its principal corresponding strategy--residual insecticide spraying--and to determine its suitability for inclusion in a policy on malaria control..

2. Explain the task.

   Learning Aid #11

3. Divide participants into three groups. Try to include in each group a country with experience in residual insecticide spraying. Explain that the group's task will be based on the experience of that country.

4. Assign facilitators to monitor the groups. Facilitators should do the following:

   - Review the task.
   - Inform participants of the time allotted for the exercise
   - Arrange for the selection of a timekeeper and a note-taker.
   - Remain with their designated group throughout the exercise and provide feedback when necessary.

5. Reconvene the groups and ask a representative from each group to briefly present the main points resulting from their group's discussion.

   Ask for comments and questions.

Application **(time: 2 hours)**

1. Explain that the purpose of this exercise is for participants to decide if their country will include the three prevention strategies--residual spraying, larviciding, and source reduction--in their national policy on malaria control.

2. Explain the task.

   Learning Aid #12

3. Divide the participants into country teams.

4. Assign facilitators to monitor the teams. Facilitators should do the following:

   - Review the task.
   - Inform participants of the time allotted for the exercise
   - Arrange for the selection of a timekeeper and a note-taker.
   - Remain with their designated team throughout the exercise and provide feedback when necessary.

5. Reconvene the teams and ask a representative from selected countries to present their work.

   Ask for comments and questions.

Synthesis and Summary **(time: 30 minutes)**

1. Ask participants to state their opinion of the usefulness of the criteria used to evaluate the strategies.

2. Ask participants to summarize the key points of the session.

   Learning Aid #13

3. Review the accomplishment of the session's objectives (title page).

4. Ask participants to post the results of their application exercise in the plenary hall.

5. Inform participants that the subsequent sessions will address two other prevention strategies -- chemoprophylaxis and personal protection.

LEARNING AIDS

Learning Aid #1 **Sections of the policy outline to be addressed during this session**

1. vector control
   - strategies to be promoted (larviciding, source reduction, residual spraying, etc.)
   - rationale for each strategy
   - where to be applied (coverage areas, target groups/communities)
   - conditions to apply (type of insecticide, when, how often, etc.)
   - how to manage strategy
   - persons responsible for managing strategy

Learning Aid #2 **Role of prevention**

Prevention is a necessary adjunct to case management for malaria control in Africa, because–

- The efficacy of antimalarial drugs, the principal tool of case management, is decreasing. One example is the increasing problem of anemia related to inadequate drug treatment.

- The massive use of antimalarial drugs in case management (presumptive treatment of fevers) in all likelihood will increase the selection of drug-resistant parasites.

- It is better to prevent a person from becoming infected or ill, rather than to wait for symptoms to appear before treating them; this is compounded by the fact that home treatment and treatment in health facilities are not always optimal, as discussed during the previous sessions on case management.

- It is probable that malaria prevention is a more cost-effective intervention than case management; however, this premise remains to be proven.

Learning Aid #3 **Approaches and strategies for prevention**

Approaches	Strategies
1. Destroy the parasite in the human host	• Chemoprophylaxis
2. Reduce human-vector contact	• Bednets (impregnated or not) • Insect repellant • Protective clothing
3. Destroy the adult mosquito (imagociding)	• Residual insecticide spraying • Bednets (impregnated)
4. Destroy mosquito larvae	• Larviciding (chemicals, biologic)
5. Remove breeding sites for mosquito larvae	• Source reduction (drainage, filling, water management)

Learning Aid #4 **Prevention strategies used in countries**

Strategy	Country	Geographic extent
Chemoprophylaxis (specify target group)		
Bednets: • non-impregnated • impregnated		
Residual insecticide spraying		
Larviciding: • chemical • biologic		
Source reduction		

Learning Aid #5 **Experience with prevention strategies in selected countries**

	Chemo-prophylaxis	Bednets (non-impreg)	Impregnated Bednets	Residual Spraying	Larviciding	Source Reduc.
Rationale						
Success: determinants of success sustainability						
Failures: determinants of failure						
Community participation: -planning -implementation						

Learning Aid #6 Key criteria to use in the evaluation of prevention strategies

- Efficacy
- Safety
- Cost (initial and recurring)
- Manageability
    - training
    - health education
    - supervision
    - surveillance
    - procurement/distribution of drugs and supplies
- Cultural acceptability
- Community participation in planning and implementation
- Sustainability
- Availability of materials
- Geographical feasibility (rural and urban)
- Compliance
- Endorsement by influential citizens' groups

Learning Aid #7 **Criteria for evaluating prevention strategies**

	Chemopro-phylaxis	Bednets (non-impreg)	Impregnated Bednets	Residual Spraying	Larviciding	Source Reduction
Efficacy						
Safety						
Cost						
Manageability						
Cultural acceptability						
Community participation						
Sustainability						
Availability of materials						
Geographical feasibility						
Compliance						
Endorsement by groups						

Learning Aid #8 **Rationale for larviciding and source reduction** ***(handout)***

- Larviciding and source reduction can prevent the breeding and the emergence of all adult mosquitoes, thus reducing pest mosquitoes and other mosquito-borne diseases.
- Source reduction is a "natural" technique not involving the use of chemical or biologic agents.
- Source reduction may call for community involvement.
- Source reduction is an "intersectoral" strategy and contributes to the general improvement of sanitation.
- Larviciding (using a relatively crude method, copper sulfate) successfully eliminated Anopheles gambiae from Brazil after importation of the mosquito in the 1930's.

Learning Aid #9 **Problems with larviciding and source reduction** ***(handout)***

- It is difficult to reach all breeding sites, especially in the case of Anopheles gambiae.
- Larviciding with chemicals and biologic agents needs to be evaluated for negative influences on the environment.
- Source reduction can prove expensive and may depend on the collaboration of other sectors.
- Larviciding can be expensive; for example, with Bacillus thuringiensis (BTI).
- There are few examples where source reduction or larviciding have demonstrated an effect on decreasing malaria transmission in sub-Saharan Africa. More critical evaluations need to take place, especially in urban and peri-urban areas.

Learning Aid #10 **Criteria for evaluating larviciding and source reduction strategies**

CRITERIA	LARVICIDING			SOURCE REDUCTION
	Chemical	*Fish*	*BTI*	
Efficacy	M-L	L	M-L	M-L
Safety	M-L	H	H	H
Cost	H-M	M	H	H-L
Manageability	M-L	M	M-L	M-L
Cultural acceptability	M-L	H	H	H
Community participation	L	M-L	L	H
Sustainability	M-L	M-L	M-L	H-M
Availability of materials	L	L	L	H-M
Rural feasibility	L	L	L	L
Urban feasibility	M-H	L	M-L	M-H
Compliance	M-H	M-H	M-H	M-L
Endorsement by groups	M-H	M-H	M-H	M-H

H = high
M = moderate
L = low

Learning Aid #11 **Practice and feedback exercise**

In each group:

1. Choose a country with experience in residual insecticide spraying.

2. For that country, review the following:

   - Rationale for use of insecticide spraying.
   - Advantages/successes and problems with insecticide spraying.

3. Evaluate the strategy by rating each criteria H, M, or L. Record responses in the table below.

4. Based on the table, discuss whether residual insecticide spraying should be included in the country's policy on malaria control.

5. Discuss what additional information is needed to strengthen this answer, and what additional measures could be proposed to improve the use of residual insecticide spraying (if it is recommended as a strategy in the country's policy on malaria control).

6. Prepare responses to be presented to the other groups.

CRITERIA	RESIDUAL INSECTICIDE SPRAYING
Efficacy	
Safety	
Cost	
Manageability	
Cultural acceptability	
Community participation	
Sustainability	
Availability of materials	
Geographical feasibility	
Compliance	
Endorsement by groups	

H = high
M = moderate
L= low

Learning Aid #12 **Application exercise**

In each country group:

1. Review the rationale for insecticide spraying, larvicide, and source reduction.

2. Discuss the successes and the problems with each of the three strategies.

3. Evaluate your country's experience with each of the three strategies, using the table provided below. Rate each criteria as H, M, or L.

4. Based on your responses on the table, discuss if your country will endorse each of the three strategies. For each of the strategies endorsed, decide where the strategy will be appropriately implemented, under what conditions, how the strategy will be managed, and by whom.

5. Identify additional information needed to strengthen your country's decision, and discuss the steps to take to gather this data.

CRITERIA	RESIDUAL INSECTICIDE SPRAYING	LARVICIDE	SOURCE REDUCTION
Efficacy			
Safety			
Cost			
Manageability			
Cultural acceptability			
Community participation			
Sustainability			
Availability of materials			
Geographical feasibility			
Compliance			
Endorsement by groups			

H = high
M = moderate
L= low

Learning Aid #13 **Key points of the session**

- Prevention is an intervention that is becoming increasingly important in malaria control in Africa, in view of the decreasing effectiveness of case management and antimalarial drug resistance.

- The five principal approaches to prevention are 1) destroy parasites in human host, 2) reduce human-vector contact, 3) destroy adult mosquitos, 4) destroy mosquito larvae, and 5) remove breeding sites.

  The corresponding strategies are 1) chemoprophylaxis, 2) personal protection with bednets and repellant, 3) residual spraying and impregnated bednets, 4) larviciding, and 5) source reduction.

- Several criteria, such as efficacy, safety, cost, manageability, cultural acceptability, community participation, and geographical applicability, can be used to evaluate prevention strategies.

CRITERIA	RESIDUAL INSECTICIDE SPRAYING	LARVICIDE	SOURCE REDUCTION
Efficacy			
Safety			
Cost			
Manageability			
Cultural acceptability			
Community participation			
Sustainability			
Availability of materials			
Geographical feasibility			
Compliance			
Endorsement by groups			

H = high
M = moderate
L= low

LESSON PLAN 8

PREVENTION: CHEMOPROPHYLAXIS

OBJECTIVES: By the end of the session, participants should be able to–

1. State the rationale for chemoprophylaxis as a malaria prevention strategy in selected target groups.
2. Identify problems with chemoprophylaxis as a strategy in selected target groups.
3. Evaluate the role of chemoprophylaxis as a strategy to be included in their own country's national policy on malaria control.
4. List additional information to be gathered to aid in making a decision on the inclusion of chemoprophylaxis as a strategy in the malaria policy.

METHODS: Discussion, demonstration, large and small group exercises

MATERIALS: Flip-chart paper, transparencies, markers, learning aids

TIME: 8 hours

FACILITATOR ACTIVITIES:

Introduction **(time: 1 hour, 30 minutes)**

1. Explain that a long-established prevention strategy will be discussed and re-evaluated during this session.

2. Present the objectives for the session (title page).

3. Ask participants to situate chemoprophylaxis among the five approaches to prevention and their corresponding strategies.

   Learning Aid #1

   Show those sections of the policy outline to be addressed during this session.

   Learning Aid #2

4. Explain that the approach "destroy parasites in human host" means that the infection has already been established, and that the parasites must be destroyed by giving antimalarial drugs to the host, before they cause symptoms.

   Explain that all chemoprophylaxis is done as suppressive prophylaxis (to prevent symptoms) and not as a causal prophylaxis (to prevent parasite invasion of the liver cells/red blood cells).

5. Review the list of countries who, during the previous session, stated that they use chemoprophylaxis as a prevention strategy.

   Refer to learning aid #3 (table) of lesson plan 7.

   Ask participants if they have any information to add to this table.

6. Review the experiences of selected countries with chemoprophylaxis, as stated during the previous session.

   Refer to learning aid #4 (table) of lesson plan 7.

7. Distribute the handout "Rationale for chemoprophylaxis." Ask one participant to read the rationale aloud.

   Learning Aid #3

8. Distribute the handout "Problems with chemoprophylaxis." Ask another participant to read the problems aloud.

   Learning Aid #4

Demonstration **(time: 2 hours)**

1. Explain that the purpose of this demonstration is to examine chemoprophylaxis according to the criteria developed in the previous session.

2. Explain to participants that they will analyze the general suitability of chemoprophylaxis to malaria control programs in Africa. Present the criteria developed during the previous session, and explain that they will be used again for this analysis.

   Learning Aid #5

3. Ask participants to fill out the table, by deciding how well each of the criteria can be met: high (H), moderate (M), or low (L). Draw participants' attention to the fact that many ratings are estimates because of lack of experience, under controlled conditions, to decide on a rating.

   Learning Aid #6

4. Ask participants to determine, on the basis of the data in the table, whether chemoprophylaxis in a) children, and b) pregnant women are suitable candidates for inclusion in the majority of countries' policy on malaria control. Ask participants to justify their decisions.

5. Emphasize that each country must consider its particular conditions to decide whether chemoprophylaxis should be included in its national policy on malaria control.

   Explain that deciding on a chemoprophylaxis program for pregnant women requires specific information, such as the prevalence of malaria in pregnant women by parity, the incidence of low birth weight by birth order, the incidence or prevalence of other adverse effects of malaria in pregnant women, and the efficacy of antimalarial drugs for use in pregnancy.

6. Explain that, generally, mass chemoprophylaxis for children is not advised due to the high expense in sustaining a program. Targeted chemoprophylaxis of certain high risk subsets of children, such as those with sickle cell anemia or immune suppression should be evaluated.

Practice and Feedback **(time: 2 hours)**

1. Explain that the purpose of this exercise is for participants to analyze the suitability of including chemoprophylaxis in their countries' national policy on malaria control.

2. Explain the task.

   Learning Aid #7

3. Divide the participants into country teams.

4. Assign facilitators to monitor the country teams. Facilitators should do the following:
   - Review the task.
   - Inform participants of the time allotted for the exercise.
   - Arrange for the selection of a timekeeper and a note-taker.
   - Remain with their designated team throughout the exercise and provide feedback when necessary.

5. Reconvene the teams and ask for comments and questions.

Application **(time: 2 hours)**

1. Explain that the purpose of this exercise is for program managers from one to three countries to discuss how they came to their decisions relating to the role of chemoprophylaxis in the national policy on malaria control.

2. Select representatives to present to the group. Ask them to base their discussion on the work just completed in their country team. Ask each representative to follow the outline provided.

   Learning Aid #8

3. Encourage participants to make comments and to ask questions after each presentation.

Synthesis and Summary **(time: 30 minutes)**

1. Ask participants to summarize the key points of the session.

   Learning Aid #9

2. Review the accomplishment of the session's objectives (title page).

3. Inform participants that the next session will address impregnated bednets.

LEARNING AIDS

Learning Aid #1 **Approaches and strategies for prevention**

Approaches	Strategies
1) Destroy the parasite in the human host	• Chemoprophylaxis
2) Reduce human-vector contact	• Bednets (impregnated or not) • Insect repellant • Protective clothing
3) Destroy the adult mosquito	• Residual insecticide spraying • Bednets (impregnated)
4) Destroy mosquito larvae	• Larviciding (chemicals, biologic)
5) Remove breeding sites for mosquito larvae	• Source reduction

Learning Aid #2	**Sections of the policy outline to be addressed during this session**

2. chemoprophylaxis
   - target group
   - rationale for strategy
   - antimalarial drug of choice
   - dosage schedule
   - sources of antimalarial
   - cost

Learning Aid #3 **Rationale for chemoprophylaxis** ***(handout)***

In children:

- Children under 5 years are the age group most susceptible to malaria and bear the most burden in terms of morbidity/mortality.

- If children are allowed to develop low level infection (before it is suppressed by chemoprophylaxis), they might develop some immunity overtime which will prevent them from developing severe disease.

- There are circumstances where children can be easily reached (infant clinics, schools, etc.).

In pregnant women:

- Malaria infection/disease, especially during the first pregnancy, is associated with low birth weight (prematurity and intra uterine growth retardation). The low birth weight is associated with decreased survival during the first year of life.

- When regular prophylaxis with an efficacious antimalarial drug is given under well-controlled conditions to pregnant women, there is a significant decrease in low birth weight in babies delivered from women in their first pregnancies.

In other target groups (e.g., sickle cell patients, travellers, migrants, economically important groups):

- These are at risk groups due to underlying health conditions or they are relatively non-immune groups who are exposed to malaria for a limited duration.

Learning Aid #4 **Problems with chemoprophylaxis**
(handout)

In children:

- When chemoprophylaxis is stopped, there may be not residual benefit for the individual.
- The target populations are large, raising the issue of cost and logistics.
- The highest risk groups (children under 5 years) may be the hardest group to reach on a regular basis.
- Compliance is difficult to achieve.
- Increasing chloroquine resistance is eroding the benefit of the most widely available drug.
- Cost of providing drugs to every child is high.

In pregnant women:

- Compliance may be difficult to achieve.
- Increasing chloroquine resistance is eroding the benefit of the most widely available drug.
- Although there is evidence that a well carried out prophylaxis regimen will decrease, especially in primigravidae, the incidence of maternal infection/disease, and the incidence of low birth weight, there is no clear cut evidence that such a regimen will improve the survival of children born to the women who received prophylaxis. Studies that would demonstrate this in a statistically significant manner would need to enroll more than 10,000 women and follow their outcome for at least one year.

In other target groups:

- Compliance may be difficult to achieve.
- Increasing chloroquine resistance is eroding the benefit of the most widely available drug.

Learning Aid #5 **Key criteria to use in the evaluation of prevention strategies**

- Efficacy
- Safety
- Cost (initial and recurring)
- Manageability
  - training
  - health education
  - supervision
  - surveillance
  - procurement/distribution of drugs and supplies
- Cultural acceptability
- Community participation in planning and implementation
- Sustainability
- Availability of materials
- Geographical feasibility (rural and urban)
- Compliance
- Endorsement by citizens' groups

Learning Aid #6 **Key criteria for evaluating chemoprophylaxis**

Target Groups

Criteria	Children	Pregnant Women	Other Target Groups
Efficacy	H-L (conditional on drug resistant status)	H-L (conditional on drug resistant status)	
Safety	H (if chloroquine)	H (if chloroquine)	
Cost: • initial • recurring	 H H	 H H-L (if included in prenatal care)	
Manageability: • training • health education • supervision • surveillance • drug procurement & distribution	 H-L H-L H-L H-L H-L	 H-L H-L H-L H-L H-L	
Cultural acceptability	H	M	
Community participation: • planning • implementation	 L H	 L H	
Sustainability	L	L	
Availability of materials	M-L	M-L	
Geographical feasibility: • rural • urban	 M-L H-L	 M-L H-L	
Compliance	L-M	L-M	
Endorsements by groups	L-M	L-M	

H = high
M = moderate
L = low

Learning Aid #7 **Practice and feedback exercise**

In each country team:

1. Review, for your country, the following aspects:
   - Rationale for use of chemoprophylaxis (in children, in pregnant women, in other target groups).
   - Advantages and problems with chemoprophylaxis (in children, in pregnant women, in other target groups).
2. Evaluate the chemoprophylaxis strategy by rating each criteria H, M, or L. Record responses in the table provided below.
3. Based on the table, discuss whether chemoprophylaxis (in children, in pregnant women, in other target groups) should be included in your country's national policy on malaria control. If so, decide where chemoprophylaxis will be appropriate, under what conditions, and how the strategy will be managed and by whom.
4. Identify what additional information is needed to strengthen your country's decision. Discuss steps to take to gather this data.

Target Groups

Criteria	Children	Pregnant Women	Other Target Groups
Efficacy			
Safety			
Cost: • initial • recurring			
Manageability: • training • health education • supervision • surveillance • drug procurement & distribution			
Cultural acceptability			
Community participation: • planning • implementation			
Sustainability			
Availability of materials			
Geographical feasibility: • rural • urban			
Compliance			
Endorsements by groups			

H = high
M = moderate
L = low

Learning Aid #8 **Application exercise**

Issues to discuss by the presenting managers:

- Current policies concerning chemoprophylaxis in their country
- Actual experiences with chemoprophylaxis, according to each criteria (e.g., cost, manageability)
- Problems -- how they were approached and with what degree of success
- Any additional information needed to make a decision on if to include chemoprophylaxis in their national policy
- How to obtain the information
- How a program on chemoprophylaxis will be managed, and by whom.
- Conditions on which to re-evaluate the chemoprophylaxis policy for children, pregnant women, and others.

Learning Aid #9 **Key points of the session**

- Chemoprophylaxis is a long-established prevention strategy in sub-Saharan Africa.
- Chemoprophylaxis has been previously used with children because they are the age group most susceptible to malaria and with the greatest risk of mortality.
- Chemoprophylaxis, when used regularly with pregnant women, especially primigravidas, can decrease the risk of low birth weight.
- Chemoprophylaxis should be considered for high risk groups with health conditions, such as sickle cell, and with non-immune groups, such as travellers.
- Chemoprophylaxis is no longer recommended by WHO in children, and the suitability of chemoprophylaxis in pregnant women is seriously challenged by issues such as decreasing efficacy, cost, and poor compliance.
- Continued recommendation for chloroquine prophylaxis in pregnant women may be unrealistic in countries where compliance cannot be guaranteed and where chloroquine resistance is substantial. In addition, such recommendations drain scarce resources towards an ineffective strategy.
- Alternate methods for chemoprophylaxis in pregnant women (alternate drugs such as sulfadoxine-pyrimethamine, alternate regimens that facilitate compliance) should be evaluated and their effectiveness monitored.

LESSON PLAN 9

PREVENTION: PERSONAL PROTECTION STRATEGIES

OBJECTIVES: By the end of this session, the participants will be able to–

1. State the rationale for adopting personal protection as a malaria prevention strategy.
2. Identify problems with person protection strategies, such as impregnated bednets/curtains.
3. Evaluate the role of personal protection strategies to be included in their country's national policy on malaria control.
4. List additional information to be gathered to aid in making a decision on the inclusion of personal protection strategies in a malaria policy.
5. Draft prevention guidelines for vector control, chemoprophylaxis, and personal protection strategies.

METHODS: Discussion, demonstration,small group and country team exercises

MATERIALS: Flip-chart paper, transparencies, markers, learning aids

TIME: 8 hours

FACILITATOR ACTIVITIES:

Introduction **(time: 1 hour)**

1. Explain that during this session, strategies will be discussed which aim to prevent infection by preventing contact between the mosquito vectors and human host, as well as killing the vector.

2. Present the objectives for the session (title page).

3. Ask participants to situate personal protection among the five approaches to prevention and their corresponding strategies.

   Learning Aid #1

   Show those sections of the policy outline to be addressed during this session.

   Learning Aid #2

4. Review which countries stated using personal protection strategies in session 7.

   Refer to Learning Aid #3 (table) in lesson plan 7

   Ask participants if they have information to add to this table.

5. Review the experiences of selected countries with personal protection, as stated in session 7.

   Refer to Learning Aid #4 (table) in lesson plan 7

6. Distribute the handout "Rationale for personal protection." Ask one participant to read the rationale aloud.

   Learning Aid #3

7. Distribute the handout "Problems with personal protection." Ask another participant to read the problems aloud.

Learning Aid #4

Demonstration **(time: 2 hours)**

1. Explain that the purpose of this demonstration is to examine personal protection strategies (especially impregnated bednets/curtains) according to the criteria developed in session 7.

2. Explain to participants that they will analyze the general suitability of personal protection strategies to malaria control programs in Africa. Present the criteria developed during session 7 and explain that this criteria will be used again for this analysis.

Learning Aid #5

3. Ask participants to fill out the table, by deciding how well each of the criteria can be met: high (H), moderate (M), or low (L) for each personal protection strategy. Draw participants' attention to the fact that many ratings are estimates, because of lack of experience, under controlled conditions, to decide on a rating.

Learning Aid #6

4. Ask participants to determine, on the basis of data in the table, which personal protection measures strategies are suitable candidates for inclusion in the majority of country's policy on malaria control. Ask participants to justify their decisions.

5. Emphasize that each country must consider its particular conditions to decide whether personal protection strategies should be included in its national policy on malaria control.

Practice and Feedback **(time: 2 hours)**

1. Explain that the purpose of this exercise is for participants to analyze the suitability of personal protection strategies for their own country's national policy on malaria control.

2. Divide the participants into country teams.

3. Explain the task.

   Learning Aid #7

4. Assign facilitators to monitor the country teams. Facilitators should do the following:
   - Review the task.
   - Inform participants of the time allotted for the exercise.
   - Arrange for the selection of a timekeeper and a note-taker.
   - Remain with their designated team throughout the exercise and provide feedback when necessary.

5. Reconvene the teams and ask representatives from selected countries to present their work. Ask for comments and questions from other country teams.

Application **(time: 2 hours, 30 minutes)**

1. Explain that the purpose of this exercise is for participants to complete the prevention portion of the policy guidelines. Remind participants that the guidelines on case management were drafted during session 6.

2. Explain the task.

   Learning Aid #8

3. Divide participants into country teams.

4. Assign facilitators to monitor the country teams. Facilitators should do the following:
   - Review the task.
   - Inform participants of the time allotted for the exercise.
   - Arrange for the selection of a timekeeper and a note-taker.
   - Remain with their designated team throughout the exercise and provide feedback when necessary.

5. Reconvene the teams and ask for questions and comments.

Synthesis and Summary **(time: 30 minutes)**

1. Ask participants to summarize the key points of the session.

   Learning Aid #9

2. Review the accomplishment of the session's objectives (title page).

3. Review the steps to completing a comprehensive policy statement and for gaining approval of the policy by the minister of health.

   Learning Aid #10

4. Explain that the following day's session (the last day of the workshop) will be set aside for participants to continue to work on their policy guidelines for case management and prevention. Approximately 5 hours will be allotted for drafting the policy and facilitators will be available throughout the day to answer questions.

   Inform participants that the last 2-3 hours of the day will be allotted for representatives from selected countries to present their policy guidelines and to answer any remaining questions.

5. Thank everyone for their participation in the workshop.

LEARNING AIDS

Learning Aid #1 **Approaches and strategies for prevention**

Approaches	Strategies
1) Destroy the parasite in the human host	• Chemoprophylaxis
2) Reduce human-vector contact by creating a barrier to biting by the mosquito	• *Bednets (impregnated or not)* • *Impregnated curtains* • *Insect repellant* • *Protective clothing*
3) Destroy the adult mosquito (imagociding)	• Residual insecticide spraying • *Bednets (impregnated)* • *Impregnated curtains* • *Nets at windows*
4) Destroy mosquito larvae	• Larviciding (chemicals, biologic)
5) Remove breeding sites for mosquito larvae	• Source reduction

(NOTE: *Italics* = topics covered during this session)

Learning Aid #2 **Sections of the policy outline to be addressed during this session**

3. personal protection
   - strategies to be promoted (bednets/curtains (impregnated or not), insect repellant, etc)
   - rationale for each strategy
   - where to be applied (coverage areas, target groups/communities)
   - conditions to apply (type of insecticide for impregnation, when, how often, etc.)
   - how to manage strategy
   - persons responsible for managing strategy

Learning Aid #3 **Rationale for personal protection**
(handout)

- Personal protection focuses the effort of the intervention on the most critical link of the transmission cycle (the contact between mosquitoes and humans) by repelling the mosquitoes or selectively killing them.
- Personal protection results in "real" prevention: the person protected does not come in contact with malaria parasites and does not need to take antimalarial drugs.
- By affecting other insects (and arachnids), personal protection also prevents nuisance and some other insect-borne diseases.
- Many personal protection strategies encourage and promote community participation, which is essential for sustainability.
- Widespread use of strategies (e.g., impregnated bednets) may have effects such as a decline in human-vector contact, decrease in density of infective vectors, and decline in malaria-related morbidity and mortality.

Learning Aid #4 **Problems with personal protection strategies** ***(handout)***

- For maximal effectiveness, personal protection strategies, such as bednets and repellant, need to be used every night, or at every occasion, when malaria-infected mosquitoes could bite.
- For maximal effectiveness, strategies need to be utilized by as many persons in the community as possible.
- There are still no data to demonstrate that personal protection strategies, especially impregnated bednets/curtains, decrease mortality and morbidity in very high malaria-endemic areas.
- Possible decrease in sensitivity of mosquitoes to insecticides.
- Possible high cost for both individuals and the national government in procuring, distributing, promoting and managing personal protection strategies.

Learning Aid #5 Key criteria to use in the evaluation of prevention strategies

- Efficacy
- Safety
- Cost (initial and recurring)
- Manageability
    - training
    - health education
    - supervision
    - surveillance
    - procurement/distribution of drugs and supplies
- Cultural acceptability
- Community participation in planning and implementation
- Sustainability
- Availability of materials
- Geographical feasibility (rural and urban)
- Compliance
- Endorsement by citizens' groups

Learning Aid #6 **Key criteria for evaluating personal protection strategies**

Criteria	Impregnated bednets/curtains	Insect repellant	Other
Efficacy	? (pending ongoing research)		
Safety	H		
Cost: • initial • recurring	 H M-L		
Manageability: • training • health education • supervision • surveillance • procurement & distribution	 H-M H-M H-M H-M H-M		
Cultural acceptability	H		
Community participation: • planning • implementation	 H H		
Sustainability	H-M		
Availability of materials	H-M		
Geographical feasibility: • rural • urban	? (pending ongoing research)		
Compliance	M-L		
Endorsements by groups	H-M		

Learning Aid #7 **Practice and feedback exercise**

In each country team:

1. Review, for your country, the following aspects:

   - Rationale for use of personal protection strategies.
   - Advantages and problems with personal protection strategies

2. Evaluate personal protection strategies by rating each criteria H, M, or L. Record responses in the table provided below.

3. Based on the table, discuss which personal protection strategies should be included in your country's national policy on malaria control. If so, decide where personal protection strategies will be appropriate, under what conditions, and how the strategy will be managed and by whom.

4. Identify what additional information is needed to strengthen your country's decision. Discuss steps to take to gather this data.

Criteria	Impregnated bednets/curtains	Insect repellant	Other
Efficacy			
Safety			
Cost: • initial • recurring			
Manageability: • training • health education • supervision • surveillance • procurement & distribution			
Cultural acceptability			
Community participation: • planning • implementation			
Sustainability			
Availability of materials			
Geographical feasibility: • rural • urban			
Compliance			
Endorsements by groups			

Learning Aid #8 **Application exercise**

In your country teams:

1. Take out your policy guidelines (completed for case management during session 6) and the policy outline (distributed during the first session).

2. Review the components of the section on prevention.

3. Based on your work during the previous sessions on prevention, draft guidelines on vector control, chemoprophylaxis, and personal protection.

4. Identify additional data needed to complete these guidelines and propose how to collect the information.

Note: Each country team will have additional time to review, discuss, and draft policy guidelines on case management and prevention during the following day.

Learning Aid #9 **Key points of the session**

- Personal protection strategies focus on reducing the transmission between mosquitoes and humans by repelling mosquitoes or selectively killing them.
- Various means of personal protection (repellant coils, window netting, unimpregnated bednets) have been encouraged in African countries. However, their use has depended entirely on individual decision resulting in an impact that is often difficult to assess.
- In recent years, a new method of personal protection (impregnated bednets/curtains) has appeared that allows and requires a more concerted community-based approach with the participation of the health infrastructure.
- While impregnated bednets have permitted a substantial reduction in childhood mortality in the Gambia, it remains to be seen whether such encouraging results, in a situation of seasonal transmission, will be replicated in areas of higher endemicity with more perennial transmission.

Learning Aid #10 **Steps on completing the policy statement and in gaining approval by the minister of health**

1. Meet with staff to discuss workshop and the draft policy guidelines.

2. Meet with private and public sector representatives (chief medical officers, pharmacists, medical and nursing school professors, private voluntary organizations) to discuss policy guidelines.

3. Locate any data or information necessary to complete policy guidelines and/or organize operational research studies to gather information.

4. Reach consensus with key decision makers on the policy guidelines for malaria control.

5. Incorporate guidelines into a comprehensive policy statement that also includes background information on the program, epidemiology of malaria, etc.

6. Distribute policy statement to key decision makers and revise according to their comments.

7. Submit policy statement to the minister of health for approval.

8. Distribute approved policy statement on malaria control to all providers of public and private health services.

9. Plan when the policy statement will be reviewed for any necessary revisions.

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APPENDIX A: Questionnaire for the Assessment of Training Needs (*sample*)

Country: _____ Date: _____

Completed by: _____ Title: _____

Instructions:

The purpose of this questionnaire is to identify program managers' priorities and concerns on malaria policy development. The results of this questionnaire can be used to adapt training materials for a workshop on policy development for malaria control.

I. Self-assessment of policy development skills

Please rate your skills in the following policy development areas by circling the appropriate response.

> *Good = you have done or can perform the activity or task indicated in a fully satisfactory manner*
>
> *Moderate = you may be able to complete the activity or task*
>
> *Weak = unable to complete the task satisfactorily with current experience and skills*

1. Establishing a goal for the malaria control program based on national economic and health data.

   Good Moderate Weak

2. Prioritizing interventions, such as case management, personal protection, vector control, and chemoprophylaxis, for the national malaria control program.

   Good Moderate Weak

3. Drafting national policy guidelines for case management in health services and in the home that include information on choice of drugs, health care providers, cost of drugs, case referral, etc.

   Good Moderate Weak

4. Drafting national policy guidelines on prevention that include information on vector control strategies, chemoprophylaxis, and personal protection measures.

Good Moderate Weak

III. Comments and Suggestions

Please write additional information on your skills in policy development in the space provided.

_____

_____

Please write any suggestions you have for a future workshop on policy development for malaria control.

_____

_____

_____

_____

APPENDIX B: Final Workshop Questionnaire (*sample*)

Instructions:

The facilitators of the workshop would appreciate your time in completing a questionnaire on the workshop. The results of this questionnaire will help us to design future training activities and technical assistance. Your responses will remain anonymous. Please read each statement and circle the response that best reflects your opinion. There is space available for comments; please write in clear block letters.

The following code will be used to respond to questions 2 - 16.

Strongly disagree	= 1
Disagree	= 2
No opinion	= 3
Agree	= 4
Strongly agree	= 5

---

1. Check the letter that best reflects your current professional status.

   _____ (a) Malaria Control Program Manager

   _____ (b) Director of Endemic Diseases, Preventive Medicine or Community Health Program or Project

   _____ (c) Other; please specify _____

Circle the number that best reflects your opinion - see code above

2. The purpose of the workshop is clearly related to my professional responsibilities. 1 2 3 4 5

3.	Overall, the workshop was well organized.	1	2	3	4	5
4.	Continuous evaluation activities (focus groups and large group feedback sessions) contributed to the workshop.	1	2	3	4	5
5.	The participatory learning methodology used during the workshop was an effective approach for teaching policy development skills.	1	2	3	4	5
6.	Throughout the workshop, the examples given of policy development and the discussions that followed were pertinent to issues encountered in my country.	1	2	3	4	5
7.	The organization of the training sessions enhanced my understanding of the policy development process.	1	2	3	4	5
8.	Facilitators demonstrated both the technical knowledge and the training skills necessary to conduct an effective workshop on program planning.	1	2	3	4	5
9.	Facilitators actively engaged all participants in the sharing of ideas and experiences.	1	2	3	4	5
10.	The facilitators made their expectations of the participants explicit throughout the workshop.	1	2	3	4	5

11.	The sharing of problems and identification of practical solutions among African colleagues has resulted in a more appropriate malaria policy for my country.	1	2	3	4	5
12.	The training materials (print and audio-visual) used throughout the workshop helped me to develop my policy guidelines.	1	2	3	4	5
13.	All the essential information necessary to the development of a good policy was conveyed during the workshop.	1	2	3	4	5
14.	This workshop increased my knowledge of policy development for malaria control.	1	2	3	4	5
15.	I feel more confident in my ability to develop a policy statement for malaria control due to my participation in this workshop. Why or why not?	1	2	3	4	5
16.	Gaining support for the policy statement will be facilitated by the collaborative approach to policy development adopted during this workshop. Comments:	1	2	3	4	5

17. Comments about the process of the workshop:

18. Other benefits I have gained by participating in this workshop include:

19. Other comments:

APPENDIX C: Post-Workshop Questionnaire (*sample*)

Representatives from the policy development workshop have been reviewing the policy guidelines drafted during the workshop to identify areas where further assistance may be desirable. To make this assistance as useful to us and to your country as possible, please provide us with information in the following two areas:

1. Actions that have been taken since the workshop to refine your policy guidelines and to gain approval of the policy.
2. Remaining technical concerns for implementation of the policy that need to be addressed.

The questionnaire should be completed by one of the workshop participants. If possible, the respondent should consult with other participants to ensure that responses reflect the views of all those who attended. Please provide detailed responses and use additional sheets if necessary. The information you provide will help us to identify how we can assist you in promoting the policy development process in your country. Your prompt response is appreciated.

Country_____Date_____

Completed by_____

PART 1 ACTIONS TAKEN SINCE THE POLICY DEVELOPMENT WORKSHOP

Please check <u>all</u> responses that apply and record additional information as necessary.

1. I (we) have taken the following actions since my (our) return from the policy development workshop to advance the development of the plan for the national malaria control program.

   [ ] Wrote a summary report of the workshop.

   [ ] Met with the other participants from the workshop and/or members of my staff to discuss how to finish developing the policy.

[ ] Drafted a revised or new policy statement based on my work at the workshop.

[ ] Obtained support for the new policy statement by discussing it with key decision makers.

[ ] Submitted policy statement for approval by the minister of health.

[ ] No action to date.

[ ] Other actions taken:

_____

_____

_____

_____

PART II. TECHNICAL CONCERNS FOR IMPLEMENTATION OF POLICY

Type or print clearly.

1. Please describe any barriers you have encountered while finalizing your policy statement.

_____

_____

_____

Describe any actions you have taken to overcome these barriers.

_____

_____

_____

2. Describe any technical assistance you need from the workshop trainers.

_____

_____

_____

Thank you very much for taking the time to complete this questionnaire.